Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Masking Paste

We are interested in learning the names and addresses of manufacturers of commercial masking paste, for spray painting. — M. O. Corp. (Rubber Battery Containers).

Pickled Pine Finish

We have many orders to construct pieces of furniture using old pine—wood that is 50 to 100 years old. These pieces are to have the "pickled" finish, and many requests are for the grayish tone.

This color is easily obtainable with English deal but the old American pine comes up yellow. We always get a fine finish on this wood when a beige or brownish color is all right, but have met with little success when a grayish tone is required. Any suggestions will be appreciated.—A. O. C. (Antiques).

Can We Prevent Darkening of Light Woods?

Some of our customers, to whom we have sold considerable harewood, both in the natural and silver gray (the latter treated chemically to produce the gray color) have been complaining that the color turns and as a result they are having serious complaints on some of the furniture they have sold.

We know that all woods (as well as other things which nature has provided in white, such as ivory, bone, etc.) will change in time, due to the action of light and air, but we would like to know if anyone in the finishing industry has found or developed a lacquer or varnish that will absolutely protect the wood from light and air, so as to prevent this? We doubt it, but will appreciate any information you may have developed along these lines.—T. A. Co.

Lacquered Paper Caps; Cocobolo Wood

In your April edition of INDUSTRIAL FINISHING, there was quite an interesting article on page 46, regarding lacquered paper caps. As manufacturers of industrial finishes, including lithographed finishes and paper finishes, we believe that we have a product which would be suitable for the milk bottle caps you describe, and we would appreciate having you give us the name of the company manufacturing these caps. — The Watson-Standard Co..

We noticed, on page 46 of your April issue, the article "Lacquered Paper Caps to Stick Together." It is quite possible that our experience in this field may be put to some practical help for the firm making the inquiry. Would you please advise the name and address of the firm making this inquiry, so we can then get in touch with them?

Also, on page 52 of this issue, some manufacturer, "R. P. Co.", makes inquiry regarding cocobolo wood. We have had some experience along this

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line and would appreciate receiving this firm's name and address so that we might get in touch with them.—Monsanto Chemical Co.

In your INDUSTRIAL FINISHING, April issue, page 52, we note that a concern signing themselves "R. P. Co." are having trouble finishing their cocobolo and rosewood handles. We would appreciate it if you would kindly give us their name . . . .—J. H. Monteath Co. (Foreign & Domestic Hardwoods).

Printing Lacquers

Please send me the name of the manufacturer of Pliofilm Printing Lacquers.—R. E. W.

It's H. V. Walker Co., Elizabeth, N. J.—Ed.

Silk Screen Enamels

Will you kindly advise us of the names of companies who manufacture silk-screen enamels for stenciling?—P. W. Co. ("Mfrs. of the Scientific Kitchen Cabinet").

Who Will Make Wood Salad Bowls?

We have a proposition to put to people who do woodworking, that will be a very handsome piece of business for them, if we are able to locate something through your medium.

What we are after is manufacturers of wood salad bowls, round, with and without feet. If you should happen to know of anyone who has a commodity of this type, we would appreciate the information and we will let them know it is through you we received the information, should we purchase.—U. E. Co. (Advertising Novelties).

Polish Sheet Aluminum

We desire to obtain a highly polished surface on one side of .010 aluminum (various widths), in rolls. We are sending you a sample of the finish we want which is on .004 aluminum, and also a sample piece of the material we are trying to polish.

However, this must be an automatic operation. For instance, we place a roll of aluminum at one end of a machine, pass it through under the buffer, through a cleaning tank,

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then rewind it into rolls again at the other end. If you have any information along this line, or if you could direct us to anyone acquainted with this type of polishing, we would appreciate the necessary information.—E. Mfg. Co. (Seals, Labels, Name Plates).

McFadden Stains

PLEASE WIRE NAME AND ADDRESS OF COMPANY MANUFACTURING MCFADDEN STAINS.—N. MFG. CO.

It's the Lawrence-McFadden Co., Philadelphia, Pa.—Ed.

Re Paint Like Chromium

We refer to your articles on pages 9 and 7 of October 1937 and February 1938 issues of INDUSTRIAL FINISHING respectively, and should be pleased if you will ask the manufacturers of the product "Paint Like Chromium" to send us at their earliest convenience:

a) Descriptive literature;

b) F. O. B. New York price-list covering the product packed in one and five gallon cans properly boxed for export.

Thanking you in advance, we remain:—L. K. H., Semarang, Java, D. E. I.
(by Royal Dutch Airmail via Amsterdam, Holland)

In your February 1938 issue of INDUSTRIAL FINISHING magazine, mention is made in one of the letters from readers of "Paint Like Chromium." Will you kindly advise us the name of the manufacturer that makes the paint that is like chromium?—L. Body Works (All-Steel Bus and Custom-Built Commercial Bodies).

Satin Cadmium Finish

We manufacture electric fans, the blades of which are enclosed in a wire guard of new ornamental design. We desire to finish these guards in an enamel or lacquer finish that will give an appearance very closely resembling a satin cadmium-plated finish.

Could you give us the names of paint manufacturers who make the particular type of products that give us this result? In a recent issue of INDUSTRIAL FINISHING, we observed someone was asking for a paint like chromium. We would be interested in this information, too.—M. Mfg. Co. (Motor Driven Apparatus).

These concerns have been given the names of manufacturers of materials which will meet their requirements.—Ed.

Porcelain Repair Enamel

In a back issue (Sept. to be exact) of INDUSTRIAL FINISHING there was an article about repairing porcelain enamel. I would like to know if it is possible to repair this finish. I have tried many times to do this without any success.

As I am a foreman in a large metal plant, and occasionally run into such work, I would like for you to give me the names and addresses of manufacturers of material that will do this.—J. E. D.

Read the article on this in May issue, page 21.—Ed.

Improved Spray Heads

On page 15 of your April 1938 issue of INDUSTRIAL FINISHING, you mention an improved spray head for handling heavy materials, such as the new synthetic resin enamels. Would you advise the designation and manufacturer of these spray heads, and oblige?—R. T. Co. (Paints, Varnishes, Enamels, Lacquers).

Three or four of the leading spray equipment manufacturers are making these, we understand. We are submitting their names and addresses in a letter.—Ed.

Crack Filler That Stands Bleaching

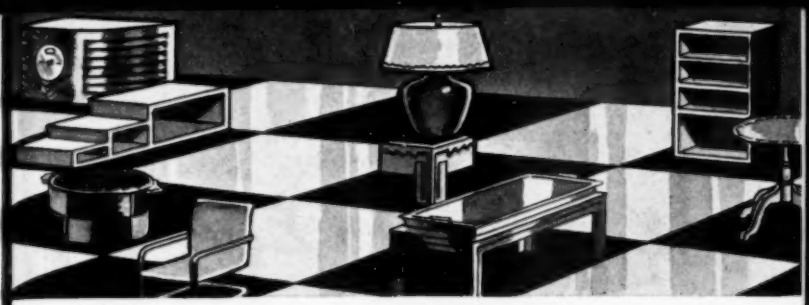
May we take this opportunity of complimenting you on the practical and worthwhile articles that are appearing in your magazine, INDUSTRIAL FINISHING?

We feel that your many paint articles contain valuable information which assists the ultimate user to obtain a clearer understanding of his paint problems.

It is noted in your "Letters received from Readers," that the G. R. E. Co. is interested in receiving a crack filler that will stand bleaching.

We would appreciate it very much if you would forward our letter to

(Continued on page 61)



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THE PROPER CARE AND USE OF FINISHING *Materials and Equipment*

by Michael Forchione

How to properly check up and take care of all incoming shipments of material and condition same for use; and what to do to maintain in first class working condition the equipment used—the spray guns, air separators, material containers, hose, spray booths, exhaust fans, conveyors, dipping tanks, hooks, racks and ovens.

THE HANDLING of spraying and dipping materials is an important part of the daily routine in the average finishing room. Many troubles can be traced to improper storing and handling of materials before they enter the finishing room.

To begin with, when a new shipment of material arrives it should be checked for color, viscosity and coverage. This should be done by a reliable intelligent worker who can be entrusted with responsibility. If something is wrong, and if he finds it when he checks the material, then the goods can be promptly returned to the manufacturer to be taken care of —and much time will be saved. On the other hand, if a careless slipshod type of worker is entrusted with this job, days and sometimes weeks may be lost, which will increase costs and cause friction all along the line.

Storage of Finishing Materials

After the incoming material has been checked, it should be stored in a dry room, preferably a steam-heated room with a temperature corresponding to that of the finishing room. Then the material can be brought to the finishing department and used immediately. Under no circumstances should it be stored near an open flame or in close proximity to flying sparks.

If there is no room available for storage the drums and cans should be kept some place where they will not be exposed to the weather; that is, they should at least have a roof over them. However, if this is not possible, the material should be brought into the finishing room at least 48 hours before it is to be used, so it will have a chance to become adjusted to the finishing room temperature.

Some finishers run the drums of material into an oven to speed up the warming of the enamel, but this procedure is dangerous, especially if open-flame gas ovens are

used. There is a good chance for an explosion or fire if the man does not pay close attention to what he is doing and how he does it.

Clean Spray Guns, Air Separators and Material Containers

Now the material container is ready for use. If it is a drum it will have to be set up and a spigot inserted, and the material will have to be thoroughly agitated and properly thinned for use. The enamel must then be strained through cheesecloth, wire screen, cotton, or whatever the foreman deems necessary for his particular type of work. Let it also be remembered that the contents of the drum must be agitated every time material is withdrawn, so that the color will remain uniform.

Before starting any spraying or dipping operations, all equipment should be checked to see that it is in good working condition. The spray gun, for instance, should be cleaned and oiled after each days work. It should not be immersed in the thinner or varnish remover, as this tends to tighten the working parts. The spray gun is a precision instrument and should be treated as such.

Then too, you have your air separator; the waste or felt or whatever is used as a filtering medium should be changed as needed so that no oil or water will come in with the air. Also, the discs on certain makes of separators should be changed frequently, so you can control an even flow of air at all times. The pressure tank should be kept clean—the outside, top and sides, as well as the inner parts. Examine the lid gasket and clamps to see that no air escapes, as if this occurs it will result in an uneven spray, which often causes a lot of rejects and streaky-looking work.

Clean Booths, Racks and Conveyors

Your spray booth should be kept as clean as possible for it is a potential fire hazard. The floors, if made of sheet steel, should be scraped with a bronze or brass scraper, as this will not make any sparks when it comes in contact with the steel floor. If a grease or compound is used for coating the interior of the booth, it should be renewed at least once a week. Exhaust flues of the spray booth should also be scraped once a week so that the booth will have satisfactory suction at all times. This cleaning operation should include all fan blades and electric lights belonging to the booth. Another thing too: Spray booth lights should be so arranged that the light goes onto the work without throwing a shadow across the material being sprayed.

If a conveyor is used, it should be kept well greased, and the hooks used on it should not be allowed to remain bent or heavily caked with paint. I have found that a small lye tank will keep these hooks clean and free from paint at a minimum cost.

If portable racks are used to put the painted material on prior to putting it in the oven to bake, these racks should be examined to see that they roll easily, and that they have no bent or twisted bars on them that could cause the material to fall off and be damaged or cause injury to the workers who will handle it. If the racks are unloaded in the finishing room

after baking, proper sticks and pads should be used so that the finished work will not be marred or scratched during the time it is being handled and transferred.

Baking Oven Operation

Baking ovens should be swept free of dirt and dust at least once a week. I have also found that going all over the inside of the oven with crude oil several times a year tends to keep the dust down. Both sides or ends of the oven should not be opened at the same time, as this will cause a draft that may sweep in a lot of dirt and lint which will settle on the work.

The oven should be constructed so that it can be kept at an even temperature at all times—at any place in the oven. This is important, especially since the public has become color conscious. If your ovens do not have an even temperature, you can and do get two or more different shades of color from one rack, which, of course, makes it hard (in fact, practically impossible) to keep to a standard.

Pressure Tanks and Hose

We must not forget the pressure tank and hose which the sprayer uses. The hose and container must be kept clean, as a dirty hose or tank is bound to cause a lot of trouble. For instance, if a man working with an oil enamel is told to change color, and if he neglects to clean his outfit properly, his next material, more than likely, will be a synthetic type enamel which will loosen and curdle the oil enamel in the tank and hose and spatter it over the work being finished, thus spoiling it and further delaying production and causing more work by adding an extra sanding operation. Often, in trouble of this kind, the loosened and curdled enamel will clog the gun, which makes it necessary to take the gun apart and clean it.

Precaution Against Fire; Dipping; Baking; Carelessness

If naphtha tanks or buckets are used for cleaning, make sure that they are equipped with a lid that can be closed instantly in case of fire. All rags should be gathered up and disposed of after each day's work, as many spontaneous-combustion fires can be traced to soiled rags which were left lying in corners and other out-of-the-way places by careless workers.

If the enamel is to be used for dipping, make sure that the dip tank is clean and that the material is agitated, reduced and strained. Then see to it that the hooks to be used are not bent or dirty with accumulated paint. Also, make sure that there will be no draft to hit the work, as this will tend to stop the flow of enamel and cause sags, runs and a heavy edge which will not harden when baked. The dip operators should also see to it that their oven is baking the material correctly, and keep their oven free from dirt. Paint spills and drippings should be immediately mopped up.

Workers in a finishing room should be carefully selected as to intelligence and safety qualities, as careless workers can and do cause much delay and increased costs in production. Always keep in mind that a dirty, carelessly kept finishing room has that grim

spectre "fire" always in the background.

Check Your Thinners Too

If your equipment is in good working condition and you still have trouble, check and see if the proper thinners are being used for the different materials. I have found that an excellent thinner for dipping-enamels is "varnolene." For dipping-synthetics, high-flash naphtha is often recommended, although it is not advisable to use large tanks for this material, as it has a tendency to fatten. For your lacquers you have many thinners to choose from, but it is best to follow the manufacturer's advice about which thinner to use for his own particular type of material. The reason for this is that lacquer thinners are composed of different materials such as xylol, butanol, butyl alcohol and butyl acetate, which are a few that are combined to form the particular thinner for the material that you will use.

Flock Finishing

IN THIS ARTICLE I will endeavor to explain how the wire screens for the fronts of radio speakers are finished or covered permanently with flock. In the first place, the flock must be cut very fine; the finer it is cut, the better the finish.

The sizing coat or adhesive upon which the flock is sprayed to make it stick to the surface to be covered is quite important. Some sizing coats work more satisfactorily than others. The sizing material I have in mind is for use on metal and should be baked (after being sprayed with flock, of course) to produce a satisfactory durable job. It is usually baked about 45 minutes at a temperature of 250°F. This temperature will not harm the colors of any rayon flock.

Flock must be kept in a dry place and used in a dry room. Dry flock will take up moisture quite rapidly. Rayon Flock gives more trouble than cotton flock in this respect. Any dampness in the air — even from the sprinkled water on a finishing room floor—will tend to keep the nap of the flock down—in other words make it lie flat. The nap of sprayed flock should stand upright to make it appear more like solid new plush.

While the flock is sprayed, the radio screen being covered should be vibrated with a simple vibrating machine. Otherwise the nap may be forced to lie too flat due to the force of the compressed air from spraying. The vibrator is operated only while the workman sprays flock. The workman then uses his air hose to blow away any excess flock.

The vibrating machine can be placed inside the spray booth. It may consist of nothing more than a rotating square bar, or one of hexagon or octagon cross section, or a round shaft with cams on opposite sides. The screen being sprayed is held against this rotating bar (turning about 1500 r.p.m.) to give it vibration at the moment of spraying.

To catch the overspray of flock or what doesn't stick to the adhesive or size-coating on the radio screen being sprayed, regular flock spray booths are available. However, if you haven't one of these flock spray booths you may get along with an ordinary spray

booth by placing a specially prepared screen over the suction exhause opening at the back of the spray booth—or over the opening to the suction fan. When the screen becomes clogged, the exhaust fan can be stopped and the excess flock can be brushed down into a container and used over again.—W. W. BENNETT.

Follow Metal Cleaning with Finishing at Once

THE importance of thoroughly cleaning metal surfaces in preparation for finishing is becoming better understood by industry, but there are still some aspects of the finishing process that need to be more thoroughly apprehended by many. One of these is the lapsed time factor in finishing. By that is meant the amount of time that is actually allowed to elapse between the time the metal has been thoroughly cleaned and dried, and the time the finishing coat is applied.

If you doubt the importance of this factor, it will be necessary only for you to give it a trial in order to convince yourself. Any cleaning process that is efficient will thoroughly remove all the surface film of foreign matter, but allowing the material to stand around, even under what seems to be favorable conditions, will allow the surfaces to again gather a certain amount of detrimental film; and this will affect the bond between the finishing coats and the surface, even though the finish is baked. The traces of harmful chemical produced by contact with the air may be present without being at all visible, consequently we cannot depend upon the appearance of the metal to the naked eye. Try finishing one piece as soon as it has been thoroughly dried after cleaning, and then try allowing another piece to stand for a day or two after cleaning before finishing. Then compare the results.

Obviously, the thing to do is to cultivate a system in which material will not be cleaned and made ready for finishing until you are ready to follow immediately with the finishing process. Failure to do this, whether the surfaces have been cleaned by sandblasting or by chemical means, is to increase chances for trouble. —H. J. E.

R. J. Moore Elected President of American Institute of Chemists

At the annual meeting of The American Institute of Chemists, Robert J. Moore, Development Manager, Varnish-Resin Division, Bakelite Corporation, Bloomfield, N. J., was elected President, succeeding Dr. Maximilian Toch. Mr. Moore, formerly of the faculty of chemistry of Columbia University, is also Chairman-elect of the North Jersey Section of the American Chemical Society.

H. V. Walker Co. Appoint W. J. DeVoti as Sales Representative

H. V. Walker Co. of Elizabeth, N. J., announce the appointment of Mr. William J. DeVoti, of Newark, N. J., as their sales representative covering the metropolitan area. Mr. De Voti is well known in the plating industry and has a large following of friends who wish him well.

Superintends Varnish Plants for F. J. Cooledge & Sons

Mr. Duncan Vernon Smith, formerly with manufacturers of finishing materials in Evansville, Ind., and Buffalo, N. Y., is now with F. J. Cooledge & Sons, Atlanta, Ga., as superintendent of the varnish department. He has had charge of varnish plants for the past 26 years.

How to Mix Stain Colors

TO MATCH VARIOUS WOOD FINISHES—I

BY W. T. SMITH
The Wood Finishes Division
Roxalin Flexible Lacquer Co.

What primary stain colors to have available for color matching; how to select colors for a preliminary mix when preparing a new formula; how to adjust the formula when preliminary mix is off color; what to use for making accurate measurements; how to test new formula; how to make calculations for a large quantity of stain—based on formula you work out. These and several other practical points of value to wood finishers are included in this 2-part article.

THE PREPARATION and adaptation of agents for the coloring of wood as an aid to emphasizing its natural decorative potentialities, adding harmony to assembled structures and, perhaps, in no lesser measure, giving an inferior wood a more attractive appearance, is probably an art as old as the use of wood itself.

Recent years have seen a number of changes in the art. Various influences, such as more rapid finishing schedules, a diminishing supply of fine cabinet woods, and a World War which stimulated domestic research in aniline dyes, have contributed to an evolution of staining to a point where it is now mainly routine work rather than the mystery it was in former years.

The so-called non-grain-raising stains today are factory prepared in stock colors such as walnuts, mahoganies, maple, etc. Stain users purchase these prepared stains by the drum and use them as received, or with the addition of a little reducer. They are available in any color, they dry rapidly, they produce less grain-raising than any other type of stain I know of (with the exception of an oil stain), they are permanent or fast to light, and they are not affected by any type of subsequent coating. Scores of different makes of these stains are on the market. They are available in standard or special colors, and in whatever consistency that may be desired.

These stains are the principal type ordinarily supplied in solution ready for use—disregarding for the moment, oil stains, the use of which are less wide and

usually less discriminating as to exact color.

Selection of Stain Colors For Color Matching

Assuming that you have frequent color changes or special and exact colors to match, and that you prefer to do your own color matching (and there's no reason why you shouldn't) ask your selected supplier to furnish you with a small quantity (say a quart or ½ gallon) of each of the following:

a sharp lemon yellow
an orange
a scarlet
a deep red
a blue black

Add a quantity of reducer, say about two or three times the quantity of any one color, and you are prepared to match any color that can be obtained with a dye stain. Some colorists prefer the added touches of a jet black, or various shades of brown, but the colors just named will be found ample for any practical purpose.

At this point let me digress for the moment to assume that, everything else being equal, you prefer a water stain. Experienced finishers will require no descriptive elaboration on the merits of this staple product. Suffice it to say that for low cost, brilliance and trueness of tone, these stains probably have no equal. Purchased in powder form, they are also obtainable in stock colors of walnut, mahogany, etc. Here again, however, the same rule holds in regard to circumstances —where colors must be changed often to meet specific requirements or where small lots of various colors are regularly needed.

Purchase pure color powders in the elementary tones listed in a previous paragraph. In case of either water or non-grain-raising stains, the idea of the system herein described is to develop your color quickly and accurately. If large quantities of a certain blend are to be used, you are then in position to furnish the stain manufacturer, whose primary colors you have used, with the exact formula for your particular requirement.

Preparing Water-Stain Solutions

Water stains should be dissolved in boiling water, allowed to stand for several hours until naturally cooled and then, if necessary, filtered or strained before use. Never allow any dye solution to remain in contact with a corrosive metal, specifically iron or steel. Keep them in crockery, glass, wood, or lead-lined or tin-lined vessels. The presence of an agitator or stirring paddle of iron is sufficient to induce discoloration within a short period of time.

The solution strength of water stains will vary with the dye itself, the use to which it is to be adapted (namely the species of wood, quality of sanding, solid wood or plywood, etc.) and on the method of its application. In general, the quantity of dye will range from 1-oz. to 4-oz. avoirdupois (16 drams, 1-oz.; 16-oz., 1-lb.) per gallon of water. Of course, some dyes have insufficient solubility to dissolve to the amount of 4-oz. per gallon, while others of high concentration need never be used to that extent.

Allowing your own experience and knowledge to be your guide as to exact concentration, may we

ADVERTISING PAGES REMOVED

make but one rigid stipulation: "Be consistent!" In other words, while the same concentration will not be used for all colors (as for example, the yellow will probably require more dye per gallon than a deep red) when you fix a certain number of ounces per gallon as your formula for a color, adhere to it religiously and accurately.

Make Standard Solutions of Primary Colors

Make, therefore, at your own discretion as to concentration, standard solutions of each of the primary colors previously listed. Keep them in closely capped jars or bottles in a dark place. Then you have your water stains on an equal footing with the ready-made solutions which you have purchased, and their matching and blending is conducted in exactly the same manner, using water as a reducer, of course.

Do not make up any great quantity of these solutions or attempt to store them for more than a week or two in any event, as the consistent behavior of an aniline solution cannot be relied upon unless you are quite familiar with the chemical nature of the dye itself. Acid dyes, for example, are quite stable; basic materials less so. If in doubt about the endurance of stability in your stain, consult your stain supplier for advice, but it is a safe rule to adhere strictly to freshly prepared solutions for consistent color accuracy.

A word here about water for use in wood stains. Contrary to a common logical supposition, water is not necessarily a universally consistent medium. Since the so-called "hard" water, containing quantities of various free carbonates, is not conducive to true color and solution behavior of dyes, it is imperative that this property be taken into consideration. By all means use a "soft" water. Rain water is excellent if available; or, in some cases, there may be a supply of distilled water from boiler-room condensers. If only "hard" water is available, it may be used by adding a small amount of a commercial water softener such as borax or trisodium phosphate, which should then be followed by a small amount (perhaps 3%) of acetic acid to neutralize the resulting free alkalinity. (Reminiscent of the oldtimer's use of vinegar to make the stain "bite".)

The venerable, and in some quarters revered, custom of adding a small amount of common salt (sodium chloride) to water stain solutions is like the habit of "knocking on wood" when making a rash statement. It is not probable that either practice does any particular harm.

Weigh Stain Powders Accurately

In making solutions of any dry stain powder, by all means "weigh" the powder to an accuracy of at least ¼-oz. Never guess at it or measure dry powders by volume. Use a balance type of scale — one that has a balance arm and depends upon the use of a compensating weight for weighing—rather than a spring scale. A photographer's balance, or the type of scale so common in grocery stores a few years ago, with a long balance arm having a sliding rider and hanger on the end for loose weights, will serve admirably if it is graduated to

weigh down to ¼-oz. units.

Assuming that we are equipped with small quantities of representative primary colors as previously described, let us consider means of combining them in proportions necessary to match desired shades. Briefly, the process consists of adding a small and always accurately measured amount of each color until the desired color is reached.

How to Measure Blending Solutions

Various methods may be used for measuring the blending solutions. A set of little aluminum measuring spoons, fastened together by a ring, is useful in a finishing room, and is available in any ten-cent store. Filled level full, any of them makes a convenient standard unit for measuring. Various graduated cylinders and vessels graduated in cubic centimeters or fluid ounces are available at laboratory supply houses.

Where there is a considerable number of color matches to be made, and where real accuracy in matching is desired, the "modus operandi" is fairly well established by conventional stain laboratory practice. It is advisable to employ the cubic centimeter (c.c.) or the mille liter (m.l.) which are exactly the same thing, as a unit for stain blending. There are 5-c.c. in a teaspoon or about 57 of them in a 2-oz. "jigger" at any bar; 1000-c.c. make a liter, which is just slightly over a quart.

Use a 50-c.c. Burette for Measuring Each Color

Procure for stain blending a standard 50-c.c. burette for each color to be used. The burette is a long glass tube about ½-in. in diameter, graduated from top to bottom in c.c. and tenths, and equipped with a fine nozzle-like tip and a ground-glass stop-cock. The burette is not prohibitively expensive and is available at any laboratory supply house.

Support the required number of burettes in a rack, or stand them in a vertical position, with their lower extremities high enough above the bench to allow setting any convenient vessel underneath. The rack or stand should be so arranged that the burettes may be readily removed for cleaning.

In the burette we have a very accurate measuring device, and its careful use will provide a consistent accuracy of color blending. Use 1-c.c. as a unit in adding colors, and where repeated trials are necessary to obtain an exact match, the actual quantity used will be so small that the mix may be discarded after each trial with a minimum wastage of stain.

When measuring liquid in the burette or any slender graduated cylinder, always take the measurement when the bottom or center of the cup-shaped surface of the liquid coincides with the graduated line. This cupped surface, showing a double line from outside the vessel, is called the meniscus. It is caused by the surface tension of the liquid, and will vary in depth with the nature of the fluid, hence the practice of reading the lowest point for accurate determinations.

After you are through using the burettes, clean them thoroughly and place them upside

down in the rack. Keep the ground surfaces of the stop-cock greased with vaseline. This not only perfects the seal and makes them work more easily, but it combats the amazing affinity the ground surfaces develop for each other when allowed to stand dry for some time.

(Part II will appear next month.)

Baking Oven Meets Unusual Conditions

A NOVEL heat-distributing air-circulating and recirculating system is incorporated into the design of this unique oven which is used to bake all types of finishes on air-conditioning units.

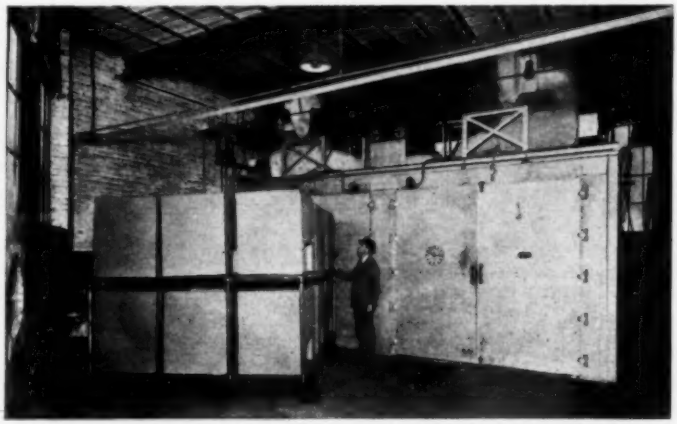
Confronted by a loading problem which required large sheets to be hung vertically at one time and laid horizontally at other times, the oven engineers arranged this oven with a novel dual heat-distributing air-circulating and recirculating system.

Now, when sheets are hung vertically, the heat is introduced at the bottom and passes vertically upward through the sheets, causing the finish on each one to be baked evenly and quickly. When sheets are laid horizontally, a simple adjustment causes the heated air to pass from side to side between the sheets—and again fast even baking is secured.

In conjunction with this novel oven system, an externally-mounted direct-gas-heating system, with large capacity fan for forcing heated air into oven ducts, is used. There are numerous recirculating air changes in the oven—and in addition there is sufficient exhaust to remove volatile fumes as quickly as formed.

Remarkable performance is claimed by the user of this oven. It is highly recommended to those manufacturers who have a variety of parts which do not permit easy flow of air around the surfaces under all loading conditions.

This oven design is applicable



This oven has a forced air distribution system to meet special baking conditions.

to all types of batch ovens as well as conveyor ovens, and many advantages of this system are attainable at very small increases over ordinary oven cost.—Despatch Oven Co.

Antique Mahogany and Walnut

CUSTOMERS often call for an antique mahogany or walnut finish. They desire a smooth well-finished surface, yet one that appears to be worn from years of service.

This effect is produced on walnut by filling the wood in the piece of furniture with a filler several shades lighter than the shade desired when finished. After the filler stain is completely dry the worn spots on arms and highlights on rungs, edges, etc., are produced by spraying a thin coat of rich brown stain and wiping the spots to be antiqued lightly with a clean absorbent cloth.

When mahogany is to be antiqued the procedure is to spray on a thin coat of rich brown stain over the filled surface, covering only where the finish is not to appear worn.

On very light pieces the procedure is reversed; the exposed edges are given the darker tone.—H. H. GLINKE.

Hammered Finish Produced by Spray

A DECORATIVE hammered metal effect can be produced with a sprayed finish on smooth surfaces. Two favorite color combinations are dark gray with silver highlights and black with bronze highlights. The dark gray has fine specks of silver in addition to the silver highlights; likewise the black has fine specks of bronze in addition to the bronze highlights. Many other color combinations are possible. The finish is so realistic that you expect to feel the natural unevenness of a genuine hammered surface.

According to one manufacturer of finishes designed to give this effect, the finish is produced by a two-coat application of a special enamel into which is mixed aluminum or bronze paste or powder—but each coat must be applied differently. The first coat is thinned and sprayed with a regular spray gun, but the second coat is sprayed full body from a spatter gun at low pressure. When this two-coat hammered finish is thoroughly dry, a clear varnish is sprayed over it. If a dull rubbed effect is desired, the varnished surface is lightly rubbed with pumic stone and oil.

Popular Automobile Colors

Among the passenger car colors popular this year, one is Brewster green in dark shades favoring the Dartmouth and dark vineyard types that have a definitely bluish cast. Many manufacturers are giving their customers the option of two blue shades, such as the Regency type of blue and a lighter, softer variation.

Bar Blue Green, a medium gray shade exactly half way between green and blue, is another color that a manufacturer of small cars is featuring. One of the most unusual shades ever shown on a motor car is a clear, bright, darkish turquoise blue green, known as Kashan Green. It is an excellent example of the style consciousness of the motor car industry. In textiles there is a trend to this type of color for sports and evening wear.—Duco Color Advisory Service.

COVERING SURFACES WITH A

Sheet Celluloid Finish

A few details, technical and otherwise, such as formulas for cements and lacquer backing to be sprayed on plain pearl sheets for colored effects, different ways of making celluloid joints, construction of tanks, modern automatic machines and presses to speed production, I did not include in this article.—The Author.

BY W. C. MINGTO

IN PRESENT day finishing for beauty and durability, the possible use of sheet celluloid, in both plain and pearl effects, must not be overlooked. Many people consider the application of sheet celluloid to any wood or composition surface as a more or less difficult task, and will not venture into this type of finishing.

Sheet celluloid can be softened by means of a chemical solution. In this state it can be easily stretched, formed or molded to cover many different articles regardless of their size or shape.

In using sheet celluloid as a decorative coating, there are two stages to consider in the process. First there is the covering; then the sanding, buffing and polishing to bring out the desired finish. First, we will deal with the covering or the application of celluloid to the article.

Celluloid can be purchased in sheets about 20x50-in., and from these sheets blanks are cut with a sharp pointed knife, according to the size and shape of the surface to be covered. These blanks then can be softened by the following means: First, place the sheets in a solution of acetone and water. This solution should be kept in a copper tank covered as nearly air tight as possible. This is termed the wet method.

Another method is to place the blanks in a box containing several copper-screen trays. The acetone is put into a copper pan in the bottom of the tank. Fumes from the acetone are blown up through a series of steam pipes and come in contact with the celluloid blanks, thereby softening them.

By either method the time required will depend upon the thickness of the celluloid; for thin sheets, about 20 to 30 minutes; for thick sheets, up to about two hours. Up to certain limits, the slower the celluloid is softened the better it is for application.

When the blanks are softened by the "wet method" they are taken out of the tank and one side is placed on a blotting cardboard to dry. The other side is

usually dried by wiping it with a cloth. Now the sheet is ready to apply.

Cementing the Celluloid Over Surface of Article

The blank is fastened on the object to be covered by means of a celluloid cement, which can be put on with either a brush or spray gun. While the cement is still wet the softened celluloid sheet is applied, molded and fitted to the outline of the article. Immediately after the article has been covered it is best to put it under pressure by means of a suitable press, or with rubber bags slightly inflated to fit closely around the article; or vacuum bags can be used. The harder the celluloid is pressed, the better the adhesion.

With the celluloid in the properly softened condition it is not so much the length of time it is under pressure as the maximum pressure that can be applied. In case the celluloid should have a tendency to stick to the press, a bit of talc can be dusted over the celluloid before it is put in the press.

As soon as the article comes out of the press, all excess celluloid should be trimmed off evenly with the back edges—or lapped together by means of a hand operation. At this stage of the process, the article is allowed to stand from three to five days. During this time the celluloid will return to its original degree of hardness. The solvents absorbed during the softening process and from the celluloid cement will pass off. A force drying operation will, in most cases, cut the drying time in half.

Trimming, Drying, Sanding and Buffing Celluloid Covering

Celluloid, when applied to wood in this manner and then hardened, will reveal more or less of a reproduction of the grain of the wood, including any irregularities, dents, etc. The solvents cause the celluloid to become flat in appearance. Now in order to bring out an attractive smooth finish, it is necessary to sand the celluloid with No. 280 soft-back wet-or-dry sandpaper, using water if possible. This sanding will smooth out and eliminate all reproductions of the grain and defects in the wood — in most cases much more rapidly than by any other means. The final finish is obtained by buffing after sanding. On very small articles the sanding operation is not always necessary; buffing alone will bring out the desired quality of finish.

The buffing is done with a muslin wheel mounted on a buffing lathe. Usually the wheel is 14 to 18-in. in diameter; 2 to 6-in. wide; and rotates 600 to 1000-r.p.m. A buffing composition or tripoli is used on the surface of the buffing wheel to make a better cutting and polishing surface. In this way a very smooth and beautiful finish is produced.

Humidity of Industrial Air

A new illustrated book of 28 white-enamel pages 8½x11-in., bound between stiff paper covers in four colors, reveals a great deal of practical information about humidity, and describes some of the latest instruments (Brown hygrometers) for recording and controlling humidity. A copy should be in the library of every industrial establishment. It is called "Catalog No. 6502," and can be obtained by writing The Brown Instrument Co., Philadelphia, Pa.

OPERATIONS, SOLUTIONS AND PROTECTIVE COATINGS USED IN THE MANUFACTURE OF

Etched Name Plates

BY C. L. MORLEY

THE NAMEPLATE industry involves a combination of many other fields, such as photography, plating, stamping, finishing, etc. It is a very complicated process, in that so many variations in the carrying out and formulation of the more or less standard routine formulas and practices are possible. In this article I will term the portions to be etched out as the background or the sunken ground and the portion not affected by the acid as the raised ground.

The first step is to make a drawing on cardboard, in black ink, of everything that is to appear on the raised surface of the nameplate. This includes both the lettering and any design, trade mark, etc., that is to stand out on the plate. This drawing is photographed, and the picture is then multiplied so that a number of images appear on the negative—the exact number being determined by the size of the plate which is to be etched and from which the individual plates will be stamped during production.

Using this negative, the positive is made on a sensitized zinc lithographic plate, which is then treated and inked up in the regular lithographic manner and put on a lithographic offset press. A special ink is required for this printing, and the exact proportion of the constituents of this ink, is dependent upon the nature of the metallic surfaces which are to be printed; usually they contain a variable amount of wax and no drier.

How and Where Asphaltum Resist Is Used

After the plates receive their printed impressions, they are dipped into an asphaltum powder and the excess asphaltum powder is removed by dipping the plate into talcum powder. Thus the asphaltum powder adheres only to the inked portion of the design. The plate is then baked at about 325°F. for three to four minutes, or until the asphaltum powder reaches its melting point and combines with the solids of the ink to form a hard-drying resist. This baking temperature is also dependent upon the nature of the metallic plate; in some cases it might have to be lowered; in others it could be raised.

The backs of the plates are then coated (painted) with a gasoline solution of asphaltum, and allowed to air dry. This prevents the acid from attacking the back of the plate.

The plate is then ready for the etching process which, in the case of a brass plate, would be done

with a ferric chloride solution, generally in a concentration which will give a Baume reading of about 40°. To operate the etching solution, requires a thorough knowledge of its working properties in order to obtain the best results.

Etching Routine

Experience can best teach the exact routine necessary for success. The operator regulates the acidity of the solution so that a uniform scum deposits on the etched surface. If the surface comes out crystalline, sodium chlorate should be added. A brown powder deposit appearing on the plate, indicates too much sodium chlorate; it is necessary to eliminate this brown scum by the addition of hydrochloric acid to the solution. The plate is given about a 7-minute etch in this solution and is then dipped in a bichromate cleaning solution, consisting of equal parts of sulphuric acid and sodium bichromate (by weight) in a concentration of about 8-oz. of this mix per gallon of water.

Each kind of metal requires different etching, blackening and cleaning. If the raised ground is to be a different color from that of the natural metal, the sheet plate must be given a metallic deposit or plating before the printing operation. This may be silver, copper, nickel, etc., and the exact nature of the raised ground, whether it is to be buffed, polished, scratch-brushed, etc., must also be accomplished before printing the plate. For the etching, plating and coloring operations, there exists an almost infinite number of formulas, and only experience can teach how the best results may be obtained.

The Black Background

The plate is now ready to receive a black background, which makes the brass figures and letters stand out clearly. This is usually done by dipping the plate for 10 to 15 minutes in an ammoniacal copper solution made by dissolving copper carbonate in ammonia and diluting with water. The plate is then washed in water, dried, and the resist removed with gasoline. A clear perspiration-resistant lacquer is then sprayed over the surface. This completes the work on the large plate; it is then ready to be taken to the punch press department and cut up into individual plates. This operation may be performed either with shears or discs, depending upon the size and shape of the small plate.

Clear Lacquer Coating

Another procedure is: When the plate is dried, after coming from the acid-cleaning solution and before the acid-resist is removed, a complete spray cover coat of special flexible lacquer enamel is applied. This lacquer should be first reduced to a proper applying consistency with reducer as recommended (about 75% to 100%). The plate is then allowed to air-dry a minimum of one hour. Of course, longer drying time will not interfere with the succeeding operations.

One thing that should be mentioned at this time is the cleaning solution used preceding the application of the enamel. In many cases a chromic acid solution is used. This is mixed in the plating room by using sodium-bichromate and sulphuric acid in the required amount of water.

The concentration of this solution and the proportion of acid in it will have a bearing on the adhesion of the lacquer. Therefore, if proper adhesion is not secured, a check should be made of these solutions. This type of cleaning solution is applied to brass metal. It is my opinion that no difficulty will result with either zinc or aluminum.

Naphtha and Lacquer-Solvent Solution

The plate is then soaked in a naphtha solution to which is added 15% of a lacquer solvent. If the lacquer thinner as used contains a high proportion of gasoline or similar derivatives, it is recommended that 20% be added. The plates are soaked in this mixture from 15 minutes to one hour, or until touching the highlights of the plate causes the enamel to readily become loose. The concentration of the lacquer solvent is not sufficient to actually dissolve the film, but it does work itself through the pores of the film, softening the acid resist present on the highlights. When the plates come from this solution, the highlights can be readily freed of the enamel by a rigid strip of celluloid. The plates are then washed in a clean naphtha solution and dried in sawdust.

Lacquer Coatings

After the plate has been dried and freed of sawdust, a spray coating of a clear flexible and perspiration-resistant lacquer is applied. This clear should be reduced to proper applying consistency and with the proper recommendation of reducer. The type of clear lacquer should possess unusually good adhesion to the metal surface (zinc, brass, aluminum and steel plates) and good properties as regards flexibility. A hard and tough film is desired.

A system that involves pigmented and clear lacquer should necessarily be secured from one source, as well as the reducer. Such coatings as applied should permit of stamping, cutting, forming and drawing without rupturing the film. Of paramount importance, adhesion and resistance to petroleum distillates should be considered.

If the lacquer does not possess adhesive qualities, the scraping operation that removes the enamel from the highlights will cause the enamel to peel. Many enamels also lose their plasticiser when in contact with this solvent mixture, thus destroying the life of the film. Oil resistance of lacquer enamels, as applied to the name-plate industry, should likewise receive consideration. When the plate is cut and formed on presses, the lubricating oil that is picked up should not affect the film.

Often difficulty is experienced in the formulation of a black lacquer to be used on etched aluminum plates. Black pigmented lacquer coatings cause more difficulty than other pigmentations, and may influence a chemical reaction. If this difficulty (adhesion over the resist) is encountered, it may be overcome by washing off the resist before the black coating is applied. The absorption of lacquer coatings over the etched surface is another minor problem encountered.

The depth of the etched surface is another factor to consider. In some cases the temperature of

the etching solution has considerable bearing on the smoothness of the plate. Regulated and controlled temperatures of an aluminum etching solution is considered important. It is difficult to make a definite recommendation for etching aluminum.

A good black background from lacquer on aluminum plates can be obtained by: a) controlling the porosity of the etched surface, and/or b) by the use of a material (coating) that will not be absorbed by the porous surface. A lacquer emulsion would apply from an absorption standpoint, but from the commercial standpoint, as regards stability of the lacquer emulsion, the fact remains that at this writing emulsions are not stable. Newer cellulosic coatings recently presented by a nationally known manufacturer offer basis for further investigation.

Tumbler Polishing

FOR A METHOD that saves some manufacturers thousands of dollars a year one would think that there would be more interest shown in various methods of tumbling.

I have tumbled small castings that would ordinarily have to be sandblasted or wire-brushed to remove molder's sand, blue scale, rust, etc., in silica sand with a great saving of labor. Steel parts can be tumbled so that scale and rust will be polished off, thus eliminating the surfacing and sanding operation. Brass, copper, bronze—in fact various types of bright work can be polished with this method.

I have, with the use of a felt-lined tumbler, polished varnished surfaces, using finely ground pumice stone in the tumbler. In fact all kinds of polishing, cleaning and burnishing can be done with silica sand, ground emery, ground glass, pumice, diamond dust, etc. It takes a little study to find the right abrasive best suited to your needs.

Incidentally, a recent inquiry in INDUSTRIAL FINISHING asked how to clean paint hooks. Tumble them in silica sand, with very little labor cost.—H. H. GLINKE.

E. F. Bessette Leaves Haynes Laboratories, Inc.

A recent letter from Ernest F. Bessette, former president of C. W. Haynes Laboratories, Inc., Springfield, Mass., announces that he has sold his interest and resigned as president of this organization. Mr. Bessette retains his connection as president of the Haynes Products Co., Inc., also of Springfield, which is a separate corporation not related to the finishing or lacquer field.

According to present plans, Mr. Bessette will continue his work in the finishing field as a consultant to manufacturers with finishing problems and will operate from his present office in Springfield, Mass.

Silk Screen Stencils

New silk screen stencils of the photo-graved graph-o-screen type, with squeegee and supplies, are offered by the Stencil Products Co., 111 Pine St., Dayton, Ohio. Quoting from the company's letter:

"We have a complete photographic equipment of photo-engraver type and are equipped to make screens by the photographic process of most any size. We have an art staff to take care of design requirements and the necessary work to adjust designs to screen requirements. Within reasonable distance from our plant we maintain a service department available to screen users. Our screens are sold on frames, ready to use."

Samples of work produced by the new silk screen stencils show attractive color illustrations that have been produced from photographs.

Shellac, Lacquer Sealer

BY R. JAY BURNS

AN EASTERN manufacturer of burial caskets asks what advantage lacquer sealer has over shellac, or vice versa, for use under lacquers that are to be rubbed and polished. I assume that he has in mind wood caskets, as shellac would have no place on metal caskets.

This has long been a subject of debate among wood finishers and I am glad of this opportunity to share my experience. Shellac was used by finishers long before lacquer manufacturers knew how to make satisfactory sealers. It is therefore a fallacy to say that shellac should not be used. As a matter of fact it has its advantages in some cases, just as it is sometimes more satisfactory to use a good lacquer sealer. In some cases a mixture of the two is better.

I am assuming here that the stain and filler coats are on and that you are ready for the sealer coat. I say this because there are times when shellac will be used as a wash-coat over sealer, regardless of what sealer will be used. This is covered rather thoroughly in my article beginning on page 19 of INDUSTRIAL FINISHING for January, 1938.

The commonly used ordinary commercial shellac has a tendency to bridge across the pores of the wood and lay out on the surface. Sealer is more inclined to penetrate into and seal the pores of wood. From the very nature of the two materials it is easy to see that shellac will make for a fuller finish, since the succeeding coats of lacquer will be held out on the surface more. Lacquer is bound to redissolve the sealer to some extent, and so penetrate further into the wood, thus losing some of its fullness.

The wise lacquer manufacturer of today is working along the lines of lacquer and sealer combinations that have a minimum of this redissolving or "reshrinking." This is accomplished by using in the lacquer, solids and solvent that are enough different from those in the sealer that the softening action is reduced to a minimum. Incidentally, there is less shrinkage over a thoroughly dried sealer than when the work is rushed, and when adequate drying of the sealer is not allowed before lacquer coats are applied.

Since commonly used commercial shellac does tend to lay out on the surface more, we have found that it has a greater tendency to check and crack when exposed to cold. Furthermore this shellac does not have quite so good a bond with the wood and may be more easily chipped off.

As a rule lacquer sealer will dry to sand in less time than is required for shellac. Shellac is reduced to working consistency

with alcohol. Even the best quality alcohol usually contains some water. This water penetrates the wood fibers causing them to stand up more than is usually true of lacquer sealer. This makes necessary a more careful sanding operation. Both materials are easily sanded; that is, they cut clean with little gumming of the paper. Some sealers will chalk down more readily and sand with less effort.

Shellac Mixing Lacquer

Recognizing the advantages of both sealer and shellac, it is now possible to combine them. This lacquer is made with an alcohol-soluble cotton that permits mixing with shellac. It is known as "shellac mixing lacquer." Ordinary lacquers do not mix with shellac. The proportion of lacquer and shellac will vary for different jobs. If there is little danger of cold checking, one part lacquer and three parts shellac will make a good sealer. Equal parts of the two will make a more stable sealer. Where cold checking is a predominating factor, it is our opinion that straight lacquer sealer is preferable.

If adequate drying time is allowed, there is no reason to suppose that the finish will retain its luster over one sealer any better than over another. In other words, if sealer is given the same time that shellac must have, it should be just as good so far as ultimate luster and fullness of the finish are concerned.

Editor's Note: At the time this article was being edited, we were having some correspondence on this subject with Mr. James W. Byrnes, Vice President of The Mac-Lac Co., Inc., so we took the liberty of referring it to Mr. Byrnes for his comments. Mr. Byrnes' letter was, in turn, referred to the author for final comment. What these experienced men have to say on this subject should be of timely interest to users of wood finishing materials. Mr. J. W. Byrnes says:

Unfortunately, I have not had enough time to substantiate some of the facts that I have in mind to answer this article as emphatically as I'd like.

1. I agree with Mr. Burns' statement that in some cases a good lacquer sealer might be more advantageous than some shellac coaters or sealers. But if the shellac coater or sealer is scientifically made . . . . we feel that shellac will do everything that a lacquer sanding sealer will accomplish.

2. In regard to shellac bridging the pores of the wood and lying out on the surface, when it is properly manufactured and sold as a sealer and coater, we maintain and are willing to prove that anyone using our No. 104, properly reduced, will find that it actually penetrates the pores of the wood and does not lie on the surface. And the majority of the lacquer sealers that I have come in contact with do lie on the surface.

Performance Depends Upon Thinning

3. Of course, if the shellac is not thinned to its proper consistency it will lie on top, but when thinned to a consistency of approximately 15% to 16% solids content, there is nothing that will penetrate the pores of the wood

faster and prevent sinking of the lacquer coats.

4. If two identical panels of wood were sprayed with a 4-lb. cut of our shellac coater, reduced 50/50, and a lacquer sealer reduced in exactly the same proportion, the one sealed with shellac would show up to better advantage and would hold up the subsequent lacquer coats in a fuller body.

5. However, it may be stated that this is due to the fact that the shellac coater contains a higher solids content. The average lacquer sealer, when reduced 50/50, contains only about 11¾% to 13% total solids, while a 4-lb. cut of shellac coater reduced 50/50 would contain between 17% and 18% total solids.

6. I think that Mr. Burns brings out a very good point for shellac when he mentions the redissolving or "reshrinkage" of lacquer and sealer combinations. In our particular shellac coater the small percentage of cotton derivatives is just sufficient to make the shellac compatible under lacquer, but not enough to cause any redissolving and breaking down of the original sealer coat. Of course, it is understood that proper drying time should be allowed a coater prior to the application of the lacquer.

Cold Check Tests

7. Since reading the copy of Mr. Burns' article in reference to the tendency of shellac to cold-check, we have started a cold-check test in our laboratory on panels coated with our No. 104 shellac coater as a sealer and finished with Rudd's gloss lacquer W-1025. Our cold-check test is made in the usual way, the panels being subjected to 135°F. heat for 30 minutes and then put in a refrigerator unit at 5° below zero for 30 minutes on each cycle. As soon as our cold-check report has been completed we shall be glad to send it to you to verify if you wish.

Furniture Finishers Like Shellac

8. Referring to Mr. Burns' statement that shellac does not have quite so good a bond with the wood and may be more easily chipped off, we have talked to many old-time wood finishers—and you can go into the Jamestown, N. Y., district and New England today and find that 75% to 80% of the furniture manufacturers in Jamestown still swear by shellac, as do a great majority of those in New England. This has been our experience not only since we have been more or less interested in the lacquer business but also during the many years that we have sold shellac.

9. It has been our further experience that in certain territories, even among the manufacturers of fine furniture in Grand Rapids, they tell us that they much prefer to use shellac, especially those who are using tung-oil varnishes and high-grade gloss lacquers.

10. The cold-check point raised by Mr. Burns is one that will receive our very close attention and you will hear further from us on this subject.

11. We shall also have the Research Bureau of the U. S. Shellac Importers Association, at the Polytechnic Institute in

Brooklyn, investigate the question of penetration of lacquer and shellac films and some time later we will report to you on this.

12. Thanks for the opportunity of reading Mr. Burns' article and writing you our comments on same. We appreciate the fairness with which Mr. Burns has approached the shellac angle, but from the background of our own experience we cannot absolutely agree with him.

Author's Final Comments

The following added notes are by the author, Mr. R. Jay Burns:

Where the term "shellac" is used in my article, I mean ordinary commercial shellac. This is the kind of shellac that industry has known and used for many years. It is not to be confused with some of the special shellacs now on the market. Some of these shellacs contain a little nitro-cotton and are somewhat like the shellac and mixing lacquer combination described in my article.

Referring to Mr. Byrnes' paragraph 3, when shellac is thinned this much, it doesn't leave much film.

Concerning his paragraph 5, most modern lacquer sealers contain about 20% solids and require no thinning so that a full coat is applied with adequate film-forming properties.

About paragraph 7, any experienced lacquer man knows that ordinary shellac is more apt to check than lacquer sealer.

On paragraph 11, this comparative test should be on the basis of each material reduced, as is common practice, and with ordinary commercial shellac.

Mammoth Alkali Stripping System

An alkali stripping system recently built by the Detroit Rex Products Co., 13005 Hillview Ave., Detroit, Mich., is believed to be the largest installation of its kind. This system has been designed and built for the removing of paint from rejected metal parts in preparation for repainting, and the removing of paint from racks and enameling hooks.

The system consists essentially of two main tanks, with an auxiliary pre-mix tank, hood arrangement, I-beam for monorail conveyor and traction wheel turns.

The tanks proper are fabricated from ¼-in. steel plate, and reinforced with structural steel angles and panels; the whole system being of all-welded construction.

The capacity of the hot alkali strip tank is 15,400 gallons; of the hot water rinsing and drying tank, 8,000 gallons; and of the mixing and preheating tank, 1,500 gallons. Steam heating coils are placed in all three of these tanks.

The hot alkali sprays are supplied by a centrifugal pump driven by a 3-h.p. motor. Spray headers are mounted on the outside of the hood and have removable plugged openings for cleaning inside nozzles. Sprays are of the overhead type.

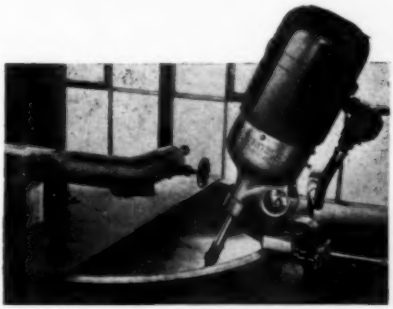
The operating cycle is briefly as follows: Immersion for 20 minutes in hot alkali strip tank, followed by spray of hot alkali strip solution to keep surface of work wetted. The work then passes through cold water rinsing sprays, after which it is submerged into a final hot water rinse for two minutes. From the final hot water rinse the work leaves the exit end of the system with its surface stripped of paint, and dry to a degree sufficient to prevent immediate rusting.

The approximate overall dimensions of this alkali stripping system are: Length, 87-ft.6-in.; width, 13-ft.2-in.; height, 13-ft.6-in. The approximate weight is 42,200-lbs.

Los Angeles Furniture Market in July

It has been announced by A. V. MacDonald, managing director of the Los Angeles Furniture Mart, that the 8th semi-annual Market Week will be held at the Los Angeles Furniture Mart, 2155 E. 7th St., Los Angeles, Calif., from Monday, July 18th, to Saturday, July 23rd, inclusive.

ADVERTISING PAGES REMOVED



Direct-drive portable type mixer used in a small tank for maintaining proper consistency and suspension of pigment in a special enamel. Where colors vary frequently and quantities are not too large, this type of agitator can be conveniently changed from one tank to another.

The Use of Agitators in

PRIMER DIPPING TANKS

PROPELLER TYPE agitators are being used with increasing frequency in primer dipping tanks. The two principal reasons for their use are to *keep the pigment in uniform suspension and to mix in thinner to make up for evaporation losses.*

Certain metal primers, when formulated for dipping, are generally made with iron oxide as the principal pigment. In the thin suspending mediums employed, this pigment settles quite rapidly. To make it fast-drying the vehicle is usually thinned with a large percentage of naphtha. Over a period of two weeks, as much as 10 to 12-in. of pigment was observed to settle in some tanks, even though the primer was hand stirred occasionally with a long paddle.

With a large surface area exposed, considerable solvent is lost through evaporation. This necessitates the addition of more thinner, which must be uniformly distributed.

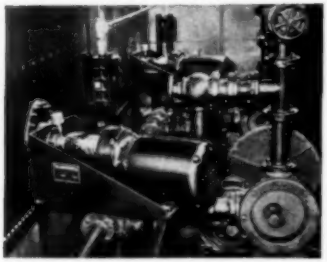
To meet these problems many large firms have installed propeller-type mixers in their dipping tanks.

One large manufacturer of automobiles has been using this type of agitator for 2½ years, experiencing no trouble of any sort. The first installation for this firm was made in a conveyor dipping tank holding about 4,500 gallons. Four units, each with a ½-h.p. motor of proper size and pitch and bronze propellers, were found entirely satisfactory. Subsequently two hand-dipping tanks and another conveyor dipping tank were installed for the same manufac-

BY E. S. BISSELL
Mixing Equipment Company

turer in other divisions of the plant, making for added efficiency.

Another automotive manufacturing corporation, builders of several makes of cars, uses this same type of mixing equipment in thinning tanks. They purchase



A pair of geared-drive angular off-center mixers in use on primer dipping tanks of several thousand gallons capacity. Agitation produced by these units is sufficient to prevent settling of iron oxide pigment in the thin suspending medium.

their primer in a more concentrated form and thin it down to dipping consistency in rectangular thinning tanks. When properly thinned, this primer is pumped into the dipping tank. After a few days the dipping tank is drained into one of the thinning tanks where evaporation loss is corrected by the addition of more thinner, and new primer is added.

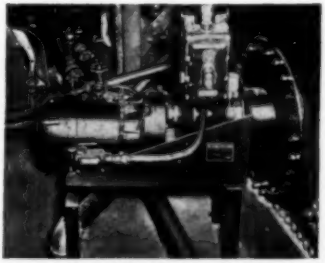
This same firm also uses propeller-type mixers in semi-automatic dipping machines where aluminum lacquer is used. In this case the mixer is operated only at intervals to mix in thinner.

Other divisions of the same corporation, both here and abroad, are users of propeller-type mixing equipment.

A manufacturer of toy express wagons, tricycles, etc., had a difficult problem which was solved through the use of a portable propeller type mixer. Here, the parts are hung from conveyor hooks and come out of the degreaser and dryer into the finishing room where the conveyor dips into a 500-gallon tank. They use a number of tanks, each equipped with wheels and all running on the same track, so they can be pushed under the spot where the conveyor dips. Each tank is for a different color.

Before placing a tank under the conveyor, the consistency of the enamel is adjusted with thinner to make up for any evaporation losses. For this they utilize the portable type mixer. These enamels are of fairly high consistency. It is a one-coat operation and the pigment does not settle out as rapidly as it does with the thin red oxide primers.

These cases and many similar ones prove the value and adaptability of properly designed and engineered propeller-type mixers for widely varying applications.



Geared-drive angular off-center mixer in use on a thinning tank. Primer, in this case, is purchased in concentrated form and thinned in this tank to the proper dipping consistency. From here primer is pumped to dipping tanks. Dipping tanks, every few days, are drained into thinning tanks and the consistency of primer is corrected to proper proportion.

1617

STANLEY

Reg. U. S. Pat. Off.

The Standard of Value!

Since 1927, when 1617 Clear Metal Lacquer was formulated as the Original Non-Spotting Lacquer, many materials have been offered with the claim made that they are just as good.

1617 remains today the Standard of Value and Comparison in Non-Spotting Clear Metal Lacquers. Used by many manufacturers the year 'round, it is during the heat and humidity of summer months, when spotting out is most prevalent, that this material proves its superior value.

Try 1617 This Summer

It is crystal clear, hard, durable, has excellent adhesion and does not turn green upon exposure.

STANLEY

THE STANLEY CHEMICAL CO.

EAST BERLIN, CONN.

LACQUERS - SYNTHETICS - ENAMELS - JAPANS

A Subsidiary of THE STANLEY WORKS, NEW BRITAIN, CONN.

FINISHING METAL AND WOOD SURFACES OF *Artificial Arms and Legs*

by A. F. Byers
Benjamin Franklin Paint & Varnish Co.

TWO TYPES of artificial limbs are on the market today—those made of metal, and those made of wood.

Progressive manufacturers construct their metal limbs from dural metal. "Dural" is a contraction of the words, "durable aluminum." This is an alloy of aluminum, used in the manufacture of airplanes. Emphasizing its lightness and durability, it is said to be, "light as aluminum, strong as steel."

In the manufacture of limbs, the dural metal is pressed to the proper shape and welded together. The metal is sanded, and is then ready for finishing.

Wooden limbs, after shaping, are covered with rawhide parchment. When wet, this parchment-skin stretches very readily; in the wet state it is glued completely around the wooden limb, and temporarily tacked into place. As it dries it shrinks to a snug fit over the wood. The tacks are then removed, seams and rough places are sanded down, and the limb is ready for finishing.

Weight is an important factor in the manufacture and sale of artificial limbs. From the user's standpoint, it is most desirable to procure a limb as light in weight as is compatible with strength and durability. That is why English willow is usually chosen for wooden limbs, and dural metal for metal limbs. So important is this factor of weight that competing products are frequently demonstrated on a scale, the assumption being that the lightest limb is the most desirable.

Comfort and utility are quite obviously of the utmost importance. Since every human being differs physiologically from every other, there is no such thing in this industry as a standard limb. Every artificial limb must be made to suit the individual who purchases it. Such factors as growth, if the limb is intended for a minor, must be taken into consideration, so that adequate adjustments can be made from time to time.

Finishing Schedule

The finishing schedule described here is the one used by J. E. Hanger, Inc., the world's largest manufacturer of artificial limbs. It is also the method generally employed, with only minor variations, throughout the industry.

Both metal and wooden limbs are finished in the same manner. After the surfaces have been prepared, two coats of nitrocellulose-base sanding primer-surfacer are applied by spraying. Each coat is allowed to dry for about 1½ hours and is then sanded with No. 3/0 sandpaper. The surfacer is a neutral color—a light gray. When priming is completed, two finishing coats of nitrocellulose-base flesh-colored lacquer enamel are sprayed on. The first finishing coat is sanded after 1½ hours, but the final coat is left unprocessed.

The shade of the finishing coat is very important, not only because it must simulate flesh but also because, if it is too much on the pink side, the red pigment generally used in the pink tends to bleed through subsequent finishing coats that may be applied from time to time. J. E. Hanger, Inc., therefore, prefers a shade more on the peach than on the pink, and such a shade also more closely resembles human flesh.

However, not all limbs are finished in this color. Brown lacquer is used for artificial limbs intended for negro customers. Some of the wooden limbs used for negroes are stained mahogany and finished with clear varnish.

On all limbs the sheen as well as the color is a matter of importance. J. E. Hanger, Inc., produce their limbs in three different sheens: 1) polished (high gloss), 2) eggshell (medium gloss), and 3) velvet (low gloss).

Some companies, such as the E. A. Williams Co., of Philadelphia, finish not only the metal and wood, but also the leather work. This firm gives the leather a coat of heavy-bodied clear gloss lacquer. As some of the leather work is subjected to flexure, the lacquer must not be brittle, but must have a fair degree of flexibility.

From a production standpoint, the chief qualities of a finishing material for use on artificial limbs are that such material be capable of ready and easy application, usually by spraying, and that it dry rapidly, without blushing.

From the sales standpoint, the chief qualities of a pigmented finishing material are color and sheen; and ability to withstand knocks and abrasions to which a limb is subjected while in service.

Marietta Paint & Color Co. Announce New Developments

Two new developments—a modern laboratory at Marietta, Ohio, and a completely equipped varnish plant at High Point, N. C., are the first of several outstanding announcements being made in connection with The Marietta Paint and Color Co.'s 40th Anniversary.

Rapid expansion of the trade sales division, new and improved products and increased activity along industrial lines necessitated these new units. Both, recently opened, are equipped with the latest type of laboratory machinery and the most modern testing equipment known to the paint industry.

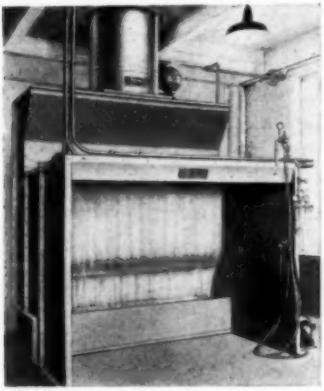
The new laboratory at the Marietta, Ohio, plant, planned and designed by Mr. H. A. Derr, technical director, contains a complete varnish plant; the most modern type of roller mills; electric, gas, and steam baking ovens; specially designed apparatus for hot and cold testing of varnish and lacquer films; and an air-conditioned finishing room, thus making it one of the best equipped laboratories in the country devoted to modern research on paints, varnishes, lacquers and wood finishes.

Greater production and faster service for customers in all parts of the south will result from the establishment of the High Point varnish plant — the only complete varnish plant in the state.

Dynaprecipitor - Water Curtain Spray Booth

The Dynaprecipitor, a radically new development which takes the place of the ordinary water-wash chamber for spray booths, has just been announced by the Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill.

Using an entirely new principle in the cleaning of paint fumes, the new Binks Dynaprecipitor reclaims all types of paints, synthetic enamel, vitreous enamel, etc. It has no nozzles to clog or wear out, gives much more efficient elimination of paint pigments from spray fumes (99% efficiency) and is very economical to operate.



Presents a wall of water in back of spray booth. Patent applied for.

The Dynaprecipitor unit is equipped with a special set of precipitator plates which are self cleaning. Another outstanding feature of the Dynaprecipitor unit is the water curtain which extends the full width of the spray booth. The paint pigments which strike this curtain are washed down into the collecting pan, thereby eliminating the necessity of cleaning the front surface of the water curtain unit.

What's New...

Duplicates a Chrome Finish

A new product that duplicates chrome finish (not to be confused with ordinary aluminum pastes or finishes) is announced by Edward C. Ballou Co., 6 Varick St., New York, N. Y. This material is available either in paste form to be used in conjunction with a varnish-type vehicle, or in a ready-mixed form. The ready-mixed product will stand 90 days before deterioration sets in. However, when you prepare your own mixture from separate paste and liquid, the mixture must be used the same day it is made up.

Both products are satisfactory for dipping, spraying or brushing; and for air-drying or baking. Of course, an absolute rub-proof finish can be obtained only by baking the product for at least half an hour at 250°F.

A super-brilliant finish is produced by this new material.

Mirotex Primers and Enamels

The Mirotex line of synthetic finishes, offered by the Industrial Division of the Indianapolis Paint & Color Co., 640 N. Capitol Ave., Indianapolis, Ind., includes both primers and enamels in air-drying and baking materials. The air-drying finishes are recommended principally for maintenance and architectural finishing, while the bake finishes are formulated for product finishing.

These synthetic finishes, used on metal surfaces, are remarkable for

What Lovely Trees...

Had you noticed them? Or did the beautiful damsel capture your eye?

Probably your product will never possess the eye-appeal of the fair lady . . . that would be expecting too much indeed!

Your product can possess eye-appeal however . . . it can be made to stand out prominently even when compared with the best of competitors. The answer is a finish scientifically designed to embody beauty, good taste, and color or tone best adapted to the product.

It is the job of our creative studio to originate such finishes for manufacturers of wood, plastic and metal products. This service has been responsible for upping sales on many kinds of merchandise . . . perhaps it can benefit you. Will you write?

ROCKFORD VARNISH COMPANY

Manufacturers of Finishing Materials

ROCKFORD, ILLINOIS

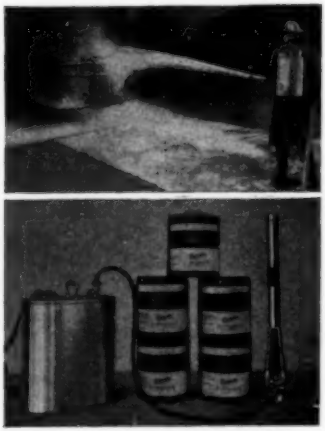
their smooth lustrous beauty, long durability and extreme resistance to grease, oil, plain and salt water, sulphur dioxide, heat, sunlight, solutions of acids and alkalis, bending, scratching, etc. The finish has the glass-like surface of porcelain enamel, but at the same time it is reasonably elastic or flexible.

An interesting and informative folder explains many important facts and detailed specifications about this new finish which is adaptable to so many different products.

Fire Extinguisher

A larger capacity Phomaire, Model PP24, that makes 500 to 750 gallons of fire-smothering foam per minute and produces 350 gallons of foam from only one gallon of Phomaide solution, is announced by the Pyrene Mfg. Co., Newark, N. J.

When the Phomaire is connected to a hose line and the water is turned on, Phomaide, and air are drawn into the water stream to form foam. Operation is practically foolproof, for there are no complicated preliminaries and no confusing adjustments. Only one person is required to handle the pipe. Operation may be continued indefinitely by merely pouring additional solution into a knapsack carried on the operator's back.



Showing the equipment in service.

Water at 75-lbs. pressure or more may be pumped from suction, hydrant or water tank. Only 35 to 40 gallons are required per minute, making it practical wherever the water supply is limited or for use on booster tank or booster pump. In addition to the foam stream for fighting flammable liquid fires, a water stream for extinguishing any lingering fire in ordinary combustibles may be utilized by simply closing the cock and cutting off the supply of foam-making solution.

Wrinkle Finishes

In response to an increasing demand for a high-quality type of wrinkle finishes, the Stanley Chemical Co. of East Berlin, Conn., are now manufacturing their 70F Wrinkle Finishes under a license arrangement with New Wrinkle, Inc. Although these materials have only been offered in recent months, the manufacturer's decision to produce this type of material has been more than justified. They are already being used in volume production by several manufacturers as the result of exhaustive tests.

While it has been comparatively simple to obtain good color and gloss in the coarse wrinkles, the manufacturers claim that in their fine (black) wrinkle they have obtained better gloss and color than has heretofore been possible.

To insure uniform results these materials are shipped ready for use. They are intended for spray application and should be sprayed with about 40-lbs. air pressure, without any reduction, and baked for two hours at 250°F. It is a characteristic of these materials that they are unaffected by air-drying for a reason-

able time before baking. Test panels have been air-dried for from five minutes up to two hours before baking without any difference in the final appearance or character of the wrinkle.

These materials have been so formulated that if a blemish occurs in the finish it may be sanded down to a smooth surface then retouched with another coat of this wrinkle and rebaked with satisfactory results. The area touched up in this manner cannot be distinguished from the remaining single-coat area after baking.

Macar Process

The Macar Process, announced by McAleer Mfg. Co., 2431 Scotten Ave., Detroit, Mich., is a new development for the treatment of the finished surfaces of automobile bodies, furniture and other products. It cleans and polishes in one easy operation, restoring the original luster and life to the finish. It comes in a can and looks like a wax, but according to the manufacturer it is not a polish, a cleaner, nor a wax, but it combines the properties of these various products through scientific formula developed after years of research.

Dual-Disc Respirator

A new dual-disc respirator for protection against Type A, or nuisance dusts, which employs unusually inexpensive throw-away filters, has just been developed in the industrial hygiene laboratory of Willson Products, Inc., 312 Thorn St., Reading, Pa. This respirator, designated as No. 750, bears Approval No. 2119 of the United States Bureau of Mines and is the eighth Willson respirator to be officially approved by the Federal Government.

Inexpensive filters are essential in many occupations, particularly wet operations. Inasmuch as only one

Provides complete safety to workman.

filter is needed for each holder, and either side of the filter may face outwardly, the wearer has no difficulty in making filter changes when needed and has assured protection. The dual-disc filters provide 28-sq.in. of filtering surface, offering the advantage of very little resistance to breathing.

Mar-Proof Finish for Woods

Something delightfully attractive and remarkably durable in wood furniture and cabinet finishes is announced by The Schaefer Varnish Co., 15th & Magnolia, Louisville, Ky.

According to the manufacturer's letter, this mar-proof nitrocellulose lacquer is a radical departure from the ordinary lacquer products and produces a finish that can not be marred or scratched with the thumb nail, and is much tougher than any lacquer that has ever come to the Schaefer Varnish Co.'s notice.

One coat of this mar-proof sealer and one coat of the new mar-proof

lacquer (either in the satin or gloss rubbing) produces ample body on the work for most purposes, but two coats of the mar-proof lacquer are suggested for higher class work.

This mar-proof lacquer is suggested as being particularly useful on a soft hardwood such as mahogany. It produces a splendid transparent finish of full depth and glossy smoothness on maple, walnut, mahogany and other cabinet woods.

A sample maple panel finished in the new mar-proof lacquer, one-half of the panel being a shade darker than the other half, has the following specifications:

1) Maple N. G. R. stain.

2) One end glazed with maple glaze.

3) One coat mar-proof sealer.

4) One coat mar-proof lacquer.

Paint Spray Respirator

Complete protection against paint spray vapors and pigments, fumes and toxic dusts, is provided by the new MSA Air Line Respirator, recently developed and placed on the market by the Mine Safety Appliances Co., Braddock, Thomas & Meade St., Pittsburgh, Pa.

The new respirator is light and comfortable, and permits the wearer to remain entirely independent of the working atmosphere, assuring him of positive protection from respiratory hazards.

Spray operator wearing new mask.

Its popular U. S. Navy half-mask-type face-piece is all rubber, easily adjusted and fits any face with a gas-tight seal. Incoming air is ingeniously deflected from directly striking the face, and the exhalation valve meets the strict U. S. Government specifications. A corrugated, non-collapsible all-rubber connecting tube extends from face-piece to flow control valve at the belt; it is flexible, durable and permits free head movement. A "bump-proof" handle and quick-release connection on the flow-control valve provides an added guarantee of safety.

Short-Bake Dulux

A new enamel for industrial finishing is announced by the du Pont Co. Known as Short-Bake "Dulux," this new finish greatly speeds up production. Its shorter baking time (8 to 10 minutes at 350°) allows a greater output with smaller ovens. Du Pont Laboratories have worked for three years in research on the new product.

In addition to its shorter baking time, the new finishing material has demonstrated satisfactory adhesion to metal and good hiding in one coat. It may be applied on solvent-cleaned steel, bonderited steel or primed steel. It shows hardness, mar resistance, flexibility and high resistance to grease, soap and alkali. White or colors are available.

C. J. Kennedy Becomes Sales Manager for McAleer Mfg. Co.

A letter from the McAleer Mfg. Co. (auto polishes, waxes, rubbing compounds), 2433 Scotten Ave., Detroit, Mich., announces the appointment of C. J. Kennedy as Sales Manager for the company. Mr. Kennedy has been with the McAleer organization for a number of years and has a background that should enable him to build much good will, as well as effectively directing sales operations.

OXFORD
VARNISH CORPORATION

directs attention to its line of . .

INDUSTRIAL and
TECHNICAL . .

PAINTS
VARNISHES
LACQUERS
ENAMELS
PRIMERS

Color and design engineering of individual and distinctive finishes

DETROIT, MICHIGAN

Silk Screen Stenciling on Glass

In your April edition, on page 5, we notice a few inquiries regarding silk-screen stenciled labels for glass, which will withstand washing solutions and can not be scratched off. We will appreciate getting some detailed information on this process.—N. H. Co.

In the first place, there is no organic color made that will stand up under washing conditions and cleansing solutions, although a synthetic varnish color will hold up for a certain length of time; therefore, it is necessary to use inorganic (ceramics) color, which requires firing in a furnace from 900° to 1200°F. from 20 minutes to one hour, according to the weight of the glass object. After firing, this color then becomes an integral part of the glass itself, which is impossible to remove or scratch.

The dry ceramic color is mixed, in a mixing machine, with what is known as squeegee oil, into a paste form. This then can be screen printed, the screen of which is fastened to a jig made especially for the object to be printed.

There are machines on the market for just such work, turning out, for instance, milk bottles or tumblers at from 500 to 1000 per hour. Ceramic screen-printed decals. of the slide-off type may also be used but after application, firing is necessary.—PRAIRIE STATE PRODUCTS CO.

You evidently refer to bottle printing which is what is being generally used at the present. This type of printing is highly specialized and requires extensive equipment in the way of ovens, etc.

The printing medium is made from ceramic colors which are mixed with a suitable vehicle and afterwards (after stenciling) fired or fused into the glass at temperatures of around 1000°F. Other than this, the screens and printing are handled the same as ordinary silk-screen printing, with the exception that when bottles are to be printed a special machine or set-up is necessary.

We do not manufacture materials for this type of printing and would suggest that you get in touch with the Solar Laboratories in Beaver, Pa., who specialize in the manufacture of materials for this type of work.—NAZ-DAR CO.

Questions Answers

To Clean Steel Tables Before Painting

We manufacture large steel tables and counters that run from 8 to 10-ft. long. We use cold-rolled steel sheets, oiled. We have found that after painting and baking, once the tables are put to use, the paint comes off very easily.

We would appreciate your advice as to what type of solution can be used on the steel to pre-

pare the metal so that the paint will adhere to it. For your information, we are not equipped to dip a large article of this type in a hot solution.—Q. M. Co. (Steel Equipment Co.).

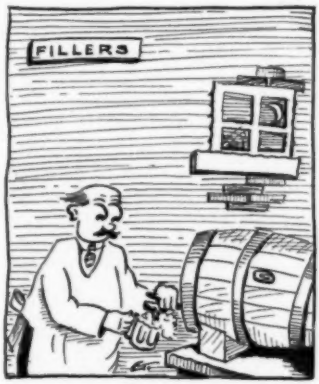
"Metalprep" is a phosphoric-acid-base cleaner especially designed to remove rust, grease and rolling compounds from the surfaces of the metal. It also destroys the chlorides, fingerprints and other "rusting agents" which may be present, and etches the metal, providing a microscopic tooth to which the prime coats or lacquer or enamel will adhere firmly.

This product has been successfully used over the last several years on iron, steel, aluminum, galvanneal, galvanized iron, cadmium and terne plate surfaces . . . . on products such as automobile bodies, trucks, trailers, buses, refrigerator cabinets, caskets, metal office furniture, metal specialties, die castings, etc.

Such conditions as chipping, peeling, flaking or scaling of the finish coats are practically unknown where this cleaner is used to prepare the metal surfaces for the various prime, lacquer or enamel coats.

The No. 10 "Metalprep" will probably fit your requirements, since it needs no equipment whatsoever. This grade of metal cleaner is applied by brushing it over the surfaces to be treated and, while the metal surface is still wet with the diluted solution, it is dried by wiping with clean dry cloths.

This cleaner has been submitted to practically all of the leading paint manufacturing companies and, without exception, they have found, after severe laboratory and field tests, that it increases the adhesion between the metal surfaces and the finish coats, so that chipping, flaking or peeling of these finishes no longer becomes a problem . . . —NEILSON CHEMICAL CO.



We manufacture a product known as "Sol-Klean Rust & Grease Remover," which we believe will be the answer to your difficulties in painting. Sol-Klean No. 110-3 is a wipe-off material which leaves a phosphatized coating, and is sold in concentrated form. Directions for using same are as follows:

1) Dilute one part of Sol-Klean with two to three parts of water.

2) Brush or wipe on the Sol-Klean solution.

3) Scrub the wetted surface well with a brush, clean rag, steelwool, sandpaper or abrasive cloth, until all rust is dissolved, rewetting again with mixture if necessary.

4) While the metal is still wet, wipe it thoroughly with clean dry

cloths. In case it has started to dry, rewet before wiping. These cleaned metal surfaces should be allowed to dry five or ten minutes before receiving the first coat.

This material is being used by manufacturers of metal office furniture, automobile bodies, trailers, and refrigerators with great success.—INDUSTRIAL CHEMICAL PRODUCTS CO.

Aromatic Cedar Oil

An inquiry about "Cedar-Odor Paint" for coating the insides of clothes closets, as published in March issue, page 65, and two answers to it in April issue, page 49, prompts us to submit a bit of information on this interesting subject.

Having distilled thousands of pounds of cedar-leaf oil in our own plant at Potsdam, N. Y., we are probably more familiar with the article and its qualities than someone not actually in touch with its production.

Cedar-leaf oil is a product quite different from oil of cedar wood.

Cedar-wood oil is made in warm climates from the red cedar which is used also for cedar chests, pencil slats and cedar pails. It is distilled from the sawdust after the wood has become dried and seasoned. It is a thick syrup oil, quite insoluble in even ordinary alcohol. It has a mild bland odor, but is very tenacious. While it is a volatile oil, it is not easily volatilized.

Cedar-leaf oil, however, is found only in the northern climates—northern New York, Vermont and New Hampshire being the main locations. The cedar from which this oil is made is called arbor vitae or white cedar, whereas the cedar-wood oil is made from the juniper species or red cedar. Cedar-leaf oil is implanted by nature in the leaves to protect them from frost, snow and chilling wind. For that reason the best stocks for distillation are found on hills or exposed spots, or where extremes of weather are likely to be found.

Cedar-leaf oil has a highly aromatic smell, somewhat on the type of lemon verbena. It is extremely fragrant and pleasing, having strong insecticide value. When the stills are started in the spring, as soon as the water and oil reach the streams where water is being pumped for the condensers, the white bellies of small fishes will be seen floating on the top. Although the distillation plants are located beside streams or ponds of fresh water, so as to obtain the supply of water needed for distillation, you will never see any flies, mosquitoes or other bugs present. Its odor is very pronounced, a still and its equipment being readily traced from a distance by the characteristic odor. In order to locate any plant, all that is necessary is to ask: "Where is the oil factory located?" and you will be instantly directed to it by any of the natives . . . .

We mention the two different kinds of oil because cedar-wood oil alone is weak and not particularly volatile. If you use it alone, the odor dies out. The cedar-leaf oil, by itself, is too quickly dissipated, even though effective. So most of those making moth-proofing solutions combine the two. The cedar wood tends to

SOLICITING PAGES REMOVED

hold the more active oil, giving off an odor that is effective. In order to gain the same result, without bothering with the cedar-wood oil, we have made a type of cedar-leaf oil that is like the cedar-wood oil, in that it is a heavy viscous product having all the virtues of the original cedar-leaf oil, without its extreme volatility. We attain a heavy gravity with all the strength and pungency of the regular oil.—SPARHAWK CO.

To Finish California Sugar Pine

We have been having some trouble in finishing California sugar pine. Whether we use paint or enamel, the gum in the wood eats through the finish and appears on the surface in shiny lines, following the lines of grain in the wood. Later the finish peels off at these places. Can you suggest an undercoating that will eliminate the trouble referred to? —J. B. Co.

Although you give no details regarding where the wood is seasoned, whether it is second growth timber, or if it is air-dried or kiln-dried, I am inclined to believe, from the information at hand, that your California sugar pine is not properly seasoned.

I would heartily recommend that the lumber be kiln-dried at a temperature between 190° to 212°F. A warm humid climate, such as is prevalent in so much of California is not noted for the satisfactory drying of lumber, due to the fact that when moisture is present in the atmosphere the moisture from the lumber cannot be withdrawn, as in a dry climate.

There must be a good reason for using this particular kind of lumber (perhaps the low cost) but I believe the expense of having the lumber kiln-dried would prove advantageous in overcoming the gum secretion. In an emergency, an acetic acid or vinegar wash of the lumber will give the paint a better bite. The lumber can also be sponged off with turpentine, but this treatment can not possibly be guaranteed to prevent exudation. Two coats of shellac will materially help in giving a good coverage and reducing possible exudation of the gum. If synthetic or lacquer material is used, a like primer should be used over the shellac.

In outside painting the prime coat can be reduced with one pint of benzine to each gallon of paint. This will cause the prime coat to penetrate better. This mixture should be used only for the prime coat. If it is used for the second coat, it is liable to loosen the prime coat. Ample drying time should be allowed between coats. The second and third coat should be heavy in white lead.

Quite often "blue stain" is mistaken for gum stains. Blue stain is a fungous growth that causes the lumber to become discolored. The best treatment is to prevent its occurrence. This can be done with a weak solution of soda-ash. However, if blue stain has already set in, the best formula to kill the fungi growth is a solution of bichloride of mercury — 1-oz. B. of M. dissolved in one gallon of water. Rinse, and paint when the surface is thoroughly dry.

(Bichloride of Mercury is a deadly poison and should be handled with extreme caution at all times).

Blue stain, being a fungus growth, will continue to spread and will cause the paint to fall off, even after a finish is carefully applied, unless the fungi is completely killed.—H. H. GLINKE.

In painting or enameling sugar pine it should first receive a bath in a caustic solution—for example, a solution of lye. This helps to neutralize the gummy resin. Then, after sanding the surface smooth, apply a coat of pure white shellac (2-lb. cut). I would then suggest the coatings be of the phenolic type of synthetic material. This will produce a lasting and durable finish.—F. R. BOYNTON.

Much of the pine wood available today is very hard to paint. It must be treated before painting if you expect to get a nice clean job. I suggest that you treat the wood with a coat of shellac, say 2½ or 3-lb. cut. A thin coat will be no good unless you apply a thin coat, followed by a primer; then apply another thin coat of shellac. You may also mix into your shellac fine aluminum powder.

In all of my pine painting, I find that I get satisfactory results by using one of these three types of coatings: A coat of shellac; a coat made up of a 50/50 mixture of sealer and undercoater; a clear sealer followed by a coat of undercoater. Then finish with whatever you plan to use as a top coat. If any trace of the sap or gum seepage appears after the sealer coat, treat these places again with shellac. Common water glass (silicate of soda) is also generally effective as a sealer or "local treatment" to prevent sap or gum or pitch from oozing out of the wood.—J. K. COOPER.

Transparent Base for Silk Screen Work

What is the product commonly referred to as "transparent process base for screen stencil work," and where can it be obtained?—N. I. Co.

Quoting from the catalog of a manufacturer and supplier of silk-screen stencil process paints and equipment:

Transparent base is a heavy-bodied paste of a light neutral color containing no pigment, and of a heavy buttery consistency. It has a number of uses and should be in every process shop.

It may be added to regular process paste paints in proportions of up to 50%. This decreases the paint cost. It does not change the shade or tone value of any color to which it is added, but it does reduce opacity in proportion to the amount of base used.

For regular printing work, when used with regular process paste paints, it effects an economy and gives better working qualities to the paint.

It is used widely in connection with our concentrated colors for securing transparent and translucent effects on lampshades, illuminated signs and similar work; may also be used for making transparent colors for overprinting.

Our transparent base, when mixed with No. 11 poster black, forms the best known medium for printing halftones and similar fine detail work; may also be used in connection with other colors for the same purpose.

Transparent base can be obtained from some of the manufacturers of silk-screen process paints and from some concerns that manufacture or deal in silk-screen stencil equipment and supplies.—Ed.

What Shellac for Wood Patterns

Today I was at the foundry where castings are to be run, and they asked me about their shellac. I told them I would ask you. Their shellac, as purchased, must be thinned, and they are using No. 5 or No. 10 alcohol. The shellac will not dry satisfactorily; it is gummy and has no gloss; and the shellaced patterns cannot be pulled from the sand mold. Also, it turns very dark and makes a rotten job on wood patterns. They tell me that on important work, they buy a little grain alcohol and cut their own shellac, and then it is the same as it was years ago; but unless this is done the shellac is just no good.

I am wondering whether some of the later synthetic finishes would not take the place of shellac and give a slick hard finish with enough body to protect the glued joints, and waterproof the wood like decent shellac used to do?—H. S. N.

In the first place, shellac for foundry use on patterns should be of the best quality. It should be cut fresh, and at no time should it be purchased from stock in the average painters' supply or jobber's store—unless the customer can be absolutely assured of obtaining shellac that has been cut recently.

For pattern work it is necessary to get not only clean shellac but it must be pure and must be cut in alcohol that does not contain slow-drying denaturants. You speak of thinning your shellac with No. 5 and No. 10 alco-

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hol. Neither of these alcohols should ever be used in conjunction with shellac. If the shellac happens to be soft because of its being a little aged, both of these alcohols will slow it up still further and give it a very greasy effect.

I suggest that you buy dry orange shellac in the superior orange grades such as DC, VSO, or some of the No. 1 light oranges of ASO quality, and cut this shellac 3-lbs. to the gallon in No. 1 proprietary alcohol such as Shellacol, Ponsolve, Solox, etc., but you should be sure that it is one of these No. 1 proprietary alcohols.

If you coat your patterns with two or three coats of this 3-lb. shellac solution you will get a fine hard-finished pattern with a bright luster. There is nothing in the world that is better for pattern or foundry work than pure high-grade shellac.—JAMES W. BYRNES, Vice-President, The Mac-Lac Co., Inc.

Waxed Finish on Beech

Can you furnish us information on how to produce a waxed birch finish on beech and, if possible, on yellow poplar? We do not wish to use lacquers, as they will increase our fire insurance rates considerably, as the fire protection is very poor out here . . . . — M. F. Co. (Nursery Furniture).

The simplest way to produce this finish on beech wood is to apply one or two thin coats of shellac, and then polish with a paste wax. As the color of beech is somewhat similar to that of birch, the shellac and wax should

be all that is necessary for the purpose.

To secure the same finish on yellow poplar, some account must be taken of the natural color of the yellow poplar wood. Most of the objectionable color may be eliminated by bleaching and, if the cost of this operation is not too great for your requirements, it will solve your problem. The wood is bleached first and then the shellac and wax are applied, as on beech or birch.

If you find that you are able to use lacquer in spite of your fire hazards, an attractive effect may be secured by using a clear lacquer which has had a small proportion of white lacquer enamel added to it. The object is to secure just enough hiding power to equalize the different colored streaks in the wood, but not to hide the wood entirely.—JAMES B. DAY & Co.

Letters from I. F. Readers

(Continued from page 8)

this inquirer, stating that we are a manufacturer of this product. We shall be pleased to offer every possible assistance in solving their problem. — The Premier Chemical Corp. (Paint Specialties).

Paints for Cement; Piano Frame Bronze

I would appreciate it if you would give me the names and addresses of, or put me in touch with, manufacturers of the following products:

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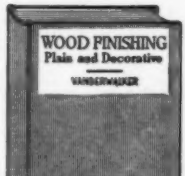

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proofing moist and weeping basements and method of application.

Please mail me copy of your latest issue and oblige. — M. K., Sydney, N. S. W., Australia.

External Atomizing . . .

Will you kindly send us either a copy of the December 1937 issue of INDUSTRIAL FINISHING, or a copy of the article on page 30, entitled "Painting Storage Batteries," and the article on page 48, entitled "External Atomizing Spray Guns"? We will appreciate receiving this information promptly.—P. A. Co. (Electric Appliances).

Air-Dry Crackle

Can you tell me if there is any company making a crackle or crinkle finish that can be applied without baking. — A. O. Co. (Commercial Trucks).

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Luminous Paints

We would appreciate it if you would advise us of sources for luminous paints, lacquers or pigments, or if you would pass our name along to manufacturers or distributors of same.—K. Y. Co. (Lamp Manufacturer).

Hand Cream

Please furnish us with information regarding hand cream for use by lacquer spray operators, as mentioned on page 5 of your issue for May 1938. We would also like to have further information regarding the porcelain repair finish mentioned on page 21 of the same issue.—O. M. Co. (Industrial Power Equipment).

Tumbling Barrels

We are seeking information concerning the building of tumbling barrels for sanding and finishing small turnings. Would you have any information available, such as the size and shape of barrels, the speed of travel, time required for tumbling smooth, material used in barrels for smoothing handles, etc.?—T. W-W. Co.

Reclaiming Thinner

We noticed, on page 30 of the February 1938 issue, a reclaiming outfit on which you have written an article. We would like to know whether anyone makes a small outfit of this type suitable for reclaiming small amounts of thinner. — T. T. Co. (Furniture Worthwhile).

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Today's Finish Better?

Sometimes, as has happened recently, I disagree with a member of our fraternity, and am prompted to write about my disagreement. Such a case happened in the January and the March issues of this year on the subject, "Is Today's Finish Better?"

It seems to me that both gentlemen are laboring under a delusion. I don't see how it is possible to blame poor finishing upon labor-saving devices or scientifically studied rates of wage payment.

Poor finishing is caused by poor preparation, poor materials, or poor workmanship; and of these three, the supervisor has full command of the last; usually recommends the second and should cooperate with his colleague in the woodworking department on the first.

In the last analysis the quality of the finish is controlled by the consuming public. As a layman, in regard to furniture finishing, I think that furniture today looks better than it ever did.

The comments in the letter in the March issue are particularly confusing; finishes (modus operandi) and finishing materials are interchanged back and forth until one does not know just where Mr. Watt is placing the blame. If he has in mind "stirring up a hornet's nest" in regard to finishing materials, I think the answer to that is "you get what you pay for." If, on the other hand, he has in mind the way the finish is applied, or the number of coats, or the amount of rubbing, etc., the piece receives in its passage through the paint shop, then he must agree that these things are controlled by the selling price which is, of course, the cost of labor and materials plus a reasonable profit.

Now, if the consuming public, through the sales force, demands a better finish, and the manufacturer knows that the public will not pay more for his product, he must resort to other methods. Usually this takes the form of new handling equipment, and new finishing materials designed especially to get more production of better quality at a substantial saving over the old cost so that he may pay for the new equipment and its maintenance. Under these circumstances no furniture manufacturer could stay in business if he did not take advantage of modern equipment or finishing materials, and if the quality of the finish slips downward, the blame must rest upon those in charge of production, and not particularly upon the method used.—E. G. Burgess.

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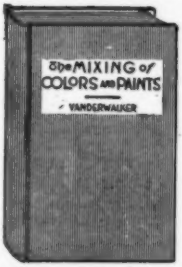

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EDITORIAL

Are You Using the New Material Correctly?

If it were as easy to make a finishing material fool-proof (meaning proof against misuse or mishandling) as it is to make it proof against various destructive agents when in service, manufacturers of finishing materials would have cause for rejoicing. But practical conditions must be faced. The ever present human element can make or break almost any brand of modern finishing material in the department where it is prepared and used. Knowing this, practically all manufacturers of finishing materials are careful to publish detailed instructions for the preparation and application of any new or unusual products they place on the market. In fairness to the material and the article being finished, these instructions should be carefully followed. Of course, as one company says in the opening paragraph of an instruction sheet:

"Due to variations in plant production and oven conditions, as well as spray equipment, it is impossible to make arbitrary rules for the application and baking of this product. However, unless very unusual conditions exist, there should be but slight deviation from the following instructions."

For a new synthetic baking finish, one manufacturer submits two typewritten pages of instructions. He goes into considerable detail, but not too much. Experience with users of finishing materials has taught him what points to cover, so he says, in substance: Store the material where the temperature will be no less than 60°F.; clean the containers, hose and spray gun before and after using; clean the metal surfaces to be finished; stir material thoroughly before using; apply material at temperatures between 70° and 90°F.

Then he recommends the ratio of thinning for various forms of application; the distance to hold the spray gun from surfaces being sprayed; the application of a full-coverage "wet coat" by both vertical and horizontal strokes of spraying, the permissible interval of air-drying time before baking; the baking temperatures and time for dark and light colors respectively.

The instructions end with this very appropriate paragraph:

"It has been our endeavor to outline in detail the best procedure for the spraying and baking of our material. There is a possibility that a question may occur to you which we have overlooked, due to our familiarity with the product; if such is the case, do not hesitate to communicate with us."

Of course, the men who prepare instructions for the use of new finishing materials can not possibly anticipate all of the diffent conditions that may exist in the shop, the surfaces to be finished, the labor, and various other local factors, but their general outline of instructions should be followed closely, and varied only when this becomes necessary or desirable.

Fire Damage Prevented By Extinguishers

A one-year record of the combined fire reports of 18 large cities reveals that over 14% of fires for which a total of 83,378 alarms were sounded, were put out before the arrival of the fire department. That means that 11,760 fires were extinguished before they had become destructive. If fire extinguishers had been available on every one of the properties involved in the other 71,618 fires, there would have been a larger percentage of fires which were put out before the arrival of the firemen.

Fire extinguishers will do the job they are designed for—putting out incipient fires—if they are properly maintained.

That conclusion is supported by records of a large insurance organization which equipped all its properties with extinguishers. For a period of four months there were 594 fires reported in these properties, but 59.8%, or 279 of them, were put out with hand fire extinguishers.

There are even more conclusive figures. All of the buildings of a large industrial organization, involving 34 factory groups, are equipped with fire extinguishers. Over a period of five years 365 fires were reported and 315, or 89.4% of them, were put out with hand fire extinguishers.

It is important to note that in these fires which did not require fire department service, there was involved little or no interruption to business, and fire and water damage was at a minimum. And most important of all, there were no consequential losses, which could easily bankrupt any business. Loss of customers, loss of skilled workmen, loss of trained salesmen, loss of income to cover fixed expenses, are some of the consequential losses.

Tried and Tested Products Reordered Frequently

In every line of business we know that a strong inclination exists among responsible and experienced buyers to reorder tried and tested products. Usually it is the safe and conservative thing to do, because as one man puts it: "You know what you are getting."

It is generally understood that such products have been tried and tested both by the manufacturers

and by many users, that they are products of dependable uniformity in all essential qualities, made and sold by companies of good reputation — companies progressive to the point of improving their products when and where real improvements can be made.

Back of these products are thought, research, the purchase of quality raw materials, experience in manufacturing, strict control of manufacturing processes, close inspection, honest dealing, truthful advertising, and many other things that have withstood the test of time and proved to be really worthwhile.

Users of finishing materials and equipment will do well to give this matter more serious thought and attention—for instance when they are about to condemn some product that may be blamed for unsatisfactory performance, or when they are offered a cheaper product for less money, or when they are on the point of cheapening their own products. You know that, as a rule, the tried and tested products, offered by reputable companies, give satisfaction, rate repeat orders and, if at any time any such product isn't satisfactory, the company back of it will "make it good." This is a pretty good guarantee any time and any where.

Equalizing Off-Color Streaks and Spots in Wood

Cabinet hardwoods, carefully selected for a uniformly matched color, are very expensive. The premium charged for such woods ranges all the way from 30% to nearly 100% over what the same woods cost when variations in color and other minor defects are permissible. However, thanks to the splendid development work done by wood finish manufacturers, it is now possible for users of hardwoods to purchase unselected lumber, treat it with suitable "equalizers," "toners," etc., and produce finished surfaces equal in appearance to those obtained from the use of a clear finish applied over the more expensive selected-for-color woods.

The removal or toning down of excessive color from dark streaks, and the addition or strengthening of color values in the too-light areas is quickly performed by spraying suitable materials—spraying them heavily where needed and then skillfully feathering out to nothing where the natural wood color needs no treatment.

Following the equalizing treatment, one manufacturer's schedule calls for spraying a "toner" over the entire surface, sanding the surface with fine sandpaper after the toner has dried two hours, wiping the surface clean, spraying a coat of glaze stain, and allowing this to dry overnight. Then follows the customary finishing with lacquer sealer and one or more coats of finishing lacquer.

Some of the furniture, cabinet and fixture manufacturers are using large quantities of these materials for equalizing variations in the colors of lower grade hardwoods, so they can produce presentably finished furniture with the lower-priced unselected hardwoods, plywoods and veneers. It is a case of the finishing department assuming still more importance and responsibility—in this instance going so far as to raise

the grade of the lumber by as much as $25.00 to $50.00 or more per thousand, and then giving the surface a final finish comparable to finishes that are found on products made of the higher priced, more carefully selected lumber.

Petroleum Diluents and Solvents

With an honest wholesome desire to present something interesting and informative to readers of INDUSTRIAL FINISHING, but with an obvious enthusiasm for his native California products, one of our correspondents (not identified with any oil company) has written us some of his impressions about petroleum diluents and solvents. He declares that:

"Asphaltic crudes from new California fields have contributed many astonishingly successful new diluents and solvents for all branches of the paint game. These new fields and new methods of refining, rate the Coast products far above the Russian fields, which furnished so much toluol for war time use. Even the asphaltic oil fields of the Southwest are not selective enough for use on this part of the paint game. . . . Selected California crude oils now furnish the very finest diluents, petroleum alcohols and light-run thinners. In these light-run solvents we find the composition about 40% toluol and the balance light-run solvent.

"These petroleum spirits blend equally as well as their coal-tar and grain-mash brothers. Properly blended with the latter two mentioned spirits, perfect catalyst combinations are readily perfected, and powerful cutting and smooth-flowing characteristics are the result . . . . "

When invited to comment on some of the technical points mentioned in our friend's article, an industrial naphtha consultant submitted, among other paragraphs, the following:

"New methods of refining such as polymerization and hydrogenation are producing naphthas of equally satisfactory value to those made in California, and in refineries more advantageously located from a freight standpoint. Further, the chemical industry and the paint and varnish formulater are learning how to use many new chemicals with lower solvency naphthas to produce the same result."

We feel that there is something of real timely interest and suggestive value in what these men have written. It is a subject worth investigation by both manufacturers and users of modern finishing materials.

Which Finish to Use Is Determined by Tests

While the personality of a salesman, the reputation of his company, and the price of his goods are still factors in the sale of finishing materials, the really dominant factor today is what the user's tests reveal. After all, if a material doesn't test up to the requirements of the job, no reputable manufacturer can honestly afford to use it, regardless of any other factors that may enter into the matter. And an increasing number of large users of finishing materials are selecting all of their finishing materials on the basis

of rigidly severe tests which they make in their own plants.

On this subject of testing finishing materials, it is timely to quote from a typical letter written to the Editor by a nationally known manufacturer of safety appliances.

"We wish to express our appreciation for the assistance you have been giving us in our search for an acid-proof finish for respiratory protective equipment we manufacture. We have assembled samples from approximately ten paint and lacquer manufacturers, and these are being subjected to laboratory tests to determine the finish best suited for our requirements."

Quoting a paragraph from one of the company's letters to a manufacturer of finishing materials:

"Through the INDUSTRIAL FINISHING magazine, we have contacted several manufacturers, and have requested all of them to submit small samples of their spray-finish lacquer, so we can coat control and test strips here in our paint shop for exposure to moist chlorine atmosphere in our research laboratory. We shall be pleased to receive samples of your synthetic enamel for an air-drying finish to be subjected to such tests."

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This is typical of how special finishing problems are being handled by leading product manufacturers. They obtain samples of several different makes of finishing materials and then make their tests. The results of these tests enable them to find which finishing material will best withstand the service that their highly competitive products are subjected to.

Oil Burner Finish

FACED with the problem of reducing the cost of finishing a new deluxe model oil burner, a customer recently adopted the following method, as preferable over a porcelain enamel finish they were then using, because it cut the cost of finishing each burner by about 30%. It gave them a finish that had all the gloss and depth of the porcelain job, yet it had the advantage of being free from orange peel or waves. Likewise, rejects and touch-ups, due to chipping of the finish during assembly or installation, have been almost entirely eliminated.

After thoroughly cleaning the surface, all deep depressions in the castings are filled with an oil-base knifing filler. A brush coat of the same filler, reduced with naphtha to the consistency of rich cream is applied and baked at 250°F. for two hours.

The filler coat is sanded with a flexible-shaft mandrel-type sander, using No. 40 grit for the rough cutting and finishing with No. 80 grit. After this the inaccessible places are hand sanded. All dust is carefully blown off with compressed air and all exposed places are wiped with a tack rag.

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What's New in FINISHES!

Case History No. 4

A most interesting and difficult problem in a protective coating for metal was presented by the rayon industry. Spools, parts and fixtures used in making rayon yarns are subjected to both alkali and sulphuric acid, sometimes 12% strength. Needless to state, such a condition made maintenance of metal parts most difficult and costly and called for an immediate solution of the problem.

The finish was developed in conjunction with other up-to-date laboratories. It consists of the application of three coats of a special acid and alkali resisting enamel. Each coat is baked for one-half to one hour at about 300°F. So satisfactory has it proven, in actual use, that many foreign as well as domestic manufacturers consider it as an essential protection to their metal equipment.

Those in the rayon industry who are interested in this problem, or others interested in the solution of a specific problem of their own, are invited to write, furnishing all details, to INDUSTRIAL RESEARCH, DIVISION OF WIPE-ON CORPORATION, 105 HUDSON STREET, NEW YORK. A complimentary copy of "Case Histories" will be sent covering this problem and others, such as, non-discoloring white metal finishes; burn-proof enamels; two-tone finishes; eyelet coatings; 10 minute air dry metal finishes; magnesium alloy finishes; airplane finishes and seam compound; and coatings to resist alkali, alcohol and acids, together with a solution of your individual problem.—Advt.

synthetic baking primer is applied and baked at 225°F. for two hours. Then the finishing coat of colored baking synthetic, in red, blue or green, is applied over the primer and baked at 200°F. for two hours.

This method of finishing has proved to be very satisfactory. It gives an economical, durable high-grade finish for use on the better grade of oil burner jobs.—R. C. SAVOYE.

Joins United Lacquer Mfg. Corp.

A letter from United Lacquer Mfg. Corp., Linden, N. J., states that Mr. John A. Peterson, for many years connected with a nationally known manufacturer of finishing materials in Brooklyn, N. Y., has joined their technical staff, effective May 17.

J. F. Roche, Jr., Becomes Vice-President of Binks Mfg. Co.

Mr. J. F. Roche, Jr., of Binks Mfg. Co., who for the past three years has been manager of the Industrial Division, has recently been appointed Vice President and a member of the Board of Directors.

Decorative Color Schemes in Free Booklet

A new consumer booklet (16 pages 10x8-in.) containing suggested color combinations for interior and exterior painting has been issued by the Finishes Division of E. I. du Pont de Nemours & Co., Wilmington, Del. "The booklet, The Magic of Color," outlines alternate treatments of various architecural styles in full colors, and includes four pages of color chips of paints, stains, lacquers, enamels and stucco coating.

Color Harmony Zippers

Manufacturers of textile, leather and other products which use zippers in their construction will be interested to know that metallic zippers

are now obtainable in plated, lacquered and colored finishes to harmonize with the design of the merchandise with which they are used. This development is a product of the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturers of electroplating equipment and supplies, who have developed a machine which automatically and continuously plates the zippers.

"Paint Adhesion and Protection from Rust;" New Booklet

A new booklet of 16 pages 8½x11-in., printed in black over white and yellow, contains illustrations and information of interest to all manufacturers of products made of metal. Quoting from a letter referring to this:

"This is a book, just issued by the Parker Rust-Proof Co., Detroit, Mich., which describes a new development in the finishing of architectural iron and steel units, as well as zinc-coated surfaces.

"Parkerizing has been used for years as a rust inhibitor on ornamental iron and steel, both as a base for paint and as a substantial finish in itself for certain indoor articles. Now, Bonderizing, a faster but equally efficient process, has been adapted to treating such products as steel windows, screen frames, air-conditioning units, medicine cabinets, galvanized sheets and many other building accessories.

"Within the past few months such outstanding manufacturers as the producers of Fenestra, Truscon, Campbell and Soule' Steel windows have installed conveyor equipment for applying Bonderizing. The American Rolling Mill Co. uses it to produce their famous Paintgrip galvanized sheets. It is a popular process, used in many industries, where paint stabilization and rust control on iron or steel is vital."

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